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MRS. J. LANGTON HEWER.

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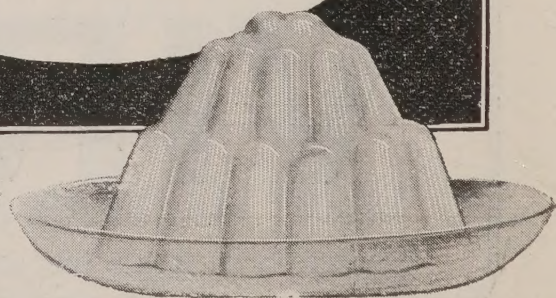
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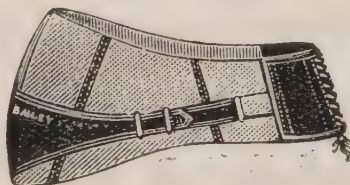
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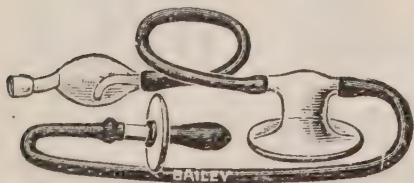
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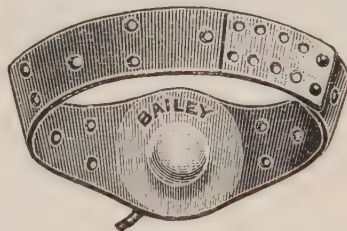


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OUR BABY:

FOR MOTHERS AND NURSES

BY
MRS. J. LANGTON HEWER
CERTIFIED MIDWIFE; LATE HOSPITAL WARD SISTER

*SIXTEENTH EDITION, ILLUSTRATED,
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(140th THOUSAND)

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1918

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<i>2nd</i>	<i>" November, 1891</i>	<i>10th</i>	<i>" February, 1906</i>
<i>3rd</i>	<i>" May, 1894</i>	<i>11th</i>	<i>" June, 1908</i>
<i>4th</i>	<i>" April, 1896</i>	<i>12th</i>	<i>" June, 1910</i>
<i>5th</i>	<i>" August, 1897</i>	<i>13th</i>	<i>" June, 1911</i>
<i>6th</i>	<i>" June, 1899</i>	<i>14th</i>	<i>" April, 1913</i>
<i>7th</i>	<i>" April, 1901</i>	<i>15th</i>	<i>" March, 1916</i>
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PREFACE

TO THE SIXTEENTH EDITION

THIS Edition completes a total issue of one hundred and forty thousand copies of *Our Baby*— a sufficient indication that the book still maintains its usefulness to Mothers and Nurses, by describing in clear and simple language the best modern scientific methods of successfully rearing infants and young children.

The work has been once more revised. Since the establishment of centres where mothers are encouraged to bring healthy and normal babies for examination and advice, scientific observers have been able to formulate with much greater exactness the best methods of rearing them. It has, therefore, been found advisable to almost re-write and at the same time to simplify and re-arrange Chapter IV., which deals with artificial feeding.

Full information is given as to the Mother's responsibility in regard to the care of her own health prior to the birth of her child ; and the great importance of breast-feeding for the first few weeks is insisted upon, practical suggestions being given for cases of difficulty which may arise.

ANNIE M. HEWER.

St. Albans,

October, 1918.

INTRODUCTION

IT is a fact, curious though true, that a human being may often be put to shame by the brute creation.

The mere animal seems instinctively to know how to provide for its young, from the first moment of its arrival till the time that it is enabled to look after itself.

The intelligent and highly cultivated female of the human race seems, however, to be deficient in instinct on this matter. What lamentable ignorance is often displayed by a young and inexperienced mother in the bringing up of her offspring ! There may be love and affection in abundance, but no knowledge.

A young mother is usually influenced a great deal by her monthly nurse, and, where the nurse is intelligent and properly trained, this is a good thing. Unfortunately, many so-called nurses have no right to the name at all ; they have inherited, or invented, certain ideas on the bringing up of a baby, to which they cling with all the tenacity of obstinate ignorance.

This little book has been written for those mothers and nurses who know that there must be a right way of bringing up a child, and who are anxious to ascertain what that way is.

No two babies are exactly alike, and every child has its own peculiarities ; but if mothers only knew some of the general principles which underlie the successful rearing of healthy children, they would be able to alter and adapt them to each individual case. Thus, instead of being at the mercy of everybody's opinion and advice, the mother will be enabled to go on in her own way, knowing that it is the right way, and, at the same time, will have a good, sound reason for all she does for Baby, be it with regard to clothing, food, ventilation, or anything else.

It may appear a Utopian idea, but it would certainly raise the standard of health in the next generation if every girl were obliged, before leaving school, to pass an examination on the very important subject of " How to bring up a Baby."

The medical chapters have been specially written for the book, and the whole has had the advantage of being revised by a London physician.

ANNIE M. HEWER.

March, 1891.

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OUR BABY.

CHAPTER I.

MY BABY.

The New-born Infant—Washing—Bathing—Dressing—Hard Water—Care of the Skin—The Hair—The Ears—The Nose—Baby's Basket—Warmth and Quiet.

A BABY, for the first few days of its life, is, as a rule, beautiful only to its mother. Its rosy hue makes it resemble a boiled lobster, to the masculine mind at least, whilst its utter lack of intelligence makes it even more uninteresting than a puppy. But to its mother, the little tiny red morsel of humanity is already both beautiful and precious. If healthy it will be plump and, after washing, will have a bloom likened to that on a ripe peach.

EARLY WASHING AND DRESSING.

The Washing of a young infant requires great care and gentleness. The skin is extremely delicate, and hard rubbing, or on the other hand imperfect drying, will chafe it. The gentle handling of a naked, new-born infant gives it feelings of discomfort, and rough, awkward handling even actual pain, so that all unnecessary movements should be avoided. And as baby becomes very easily chilled, all draughts must be guarded against, and lengthy ablutions eschewed.

Washing should be conducted before a fire, with a screen round nurse's chair, and the door and windows be carefully shut. Before the first bath the child should be gently smeared all over with some olive oil, which will help to remove the greasy material with which the skin is coated. The nurse should wear a large flannel apron, while an india-rubber one beneath acts as a guard to her dress. Everything likely to be required should be placed in baby's basket within reach.

The Bath should be small, and about half full of water at a temperature of 100° F. It is important that the temperature be always verified by a thermometer, failing which, the nurse's elbow should be the test. Baby's bath should be kept very clean, and not used for washing any soiled articles.

The child should be placed on its back, across nurse's knee, and be covered with a warm towel, which is not to be removed until the eyes and face have been carefully washed.

The eyes must be thoroughly sponged for the first week or so, night and morning, with absorbent wool and weak boracic lotion (p. 144). A fresh piece must be used for each eye, and be then thrown away. The lids must be opened and examined, and should there be any redness or sign of secretion the doctor must be informed.

The mouth may also be swabbed morning and evening with absorbent wool dipped in the lotion, but the finger should not be used, as it is too hard, and frequently causes an abrasion of the delicate mucous membrane, through which germs enter, and thrush may develop. Many doctors now prefer that it be left untouched.

The whole body is now rapidly washed with a well-soaped hand. The child is then placed in the bath (*Fig. 1*), its back resting on nurse's arm and hand. The water should cover the child entirely with the exception of its head, and, if it enjoy it, two or three minutes may be spent in the bath. The head should of course be sponged by the disengaged hand. The child is then lifted out on to nurse's lap, laid upon its back on a warm towel, and covered by a second. These should be very soft, and two of baby's diapers will answer admirably.

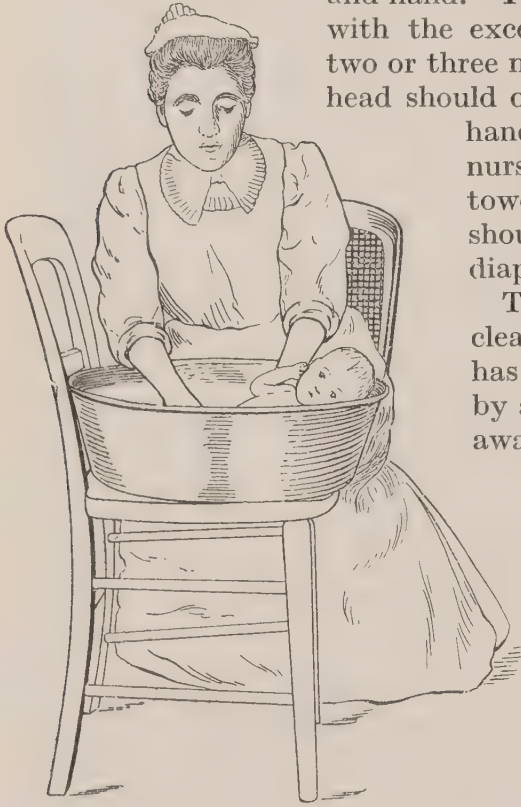


Fig. 1.—Showing method of holding child in bath.

There should be no attempt to entirely cleanse the skin at the first washing. It has been protected up to the time of birth by a greasy varnish; when this is washed away the skin is extremely soft, and until it is hardened too much care cannot be taken. The head is especially liable to damage; pure olive oil should be put on at night, and gently sponged off in the morning. The fervent scrubbing often administered frequently produces an eczematous, scurfy condition of the scalp, due to a slight abrasion through which germs enter and irritate the glands, causing excessive secretion.

The Drying consists more in careful 'dabbing' than in rubbing. After the front of the child has been dried, a little dusting powder should be rubbed on gently by the hand, especially in the folds of the groins, elbows, knees, etc. The wet undertowel being now removed, the child should be turned gently over on its stomach, and the same process repeated.

Dressing.—As soon as the drying is accomplished, dressing begins, the child still being on its stomach. On its back should be placed first the vest, then the binder, the diaper, pilch, and flannel petticoat. The

child, and its clothes, are then turned over and the cord dressed, by dusting it with some antiseptic powder, and inserting it between a slit made in a small piece of antiseptic gauze, or soft, recently-boiled linen, which is then folded up and the sides doubled over to form a little pad. The binder is now brought round, over the pad, and stitched together; it is not necessary to bind the child round and round like a mummy. The diaper is then applied by bringing up its point between the child's legs, and pinning it together. It is well, before fastening up the diaper, to grease the child in these regions with hazeline cream, which helps to harden the skin at a spot where it is subjected to severe treatment. A good plan is to lay a piece of lint or clean rag on the diaper, which is burnt when soiled. This saves washing and is more sanitary. If the expense can be afforded, 'Knapkenettes,' burnt after use, are a great convenience. Pads of Gamgee or wood wool should always be used at night, to keep the child comfortable through its long sleep. It may be mentioned here, that when washing the buttocks, after being soiled, the wool used should be passed from front to back, especially with girl babies.

The pilch is now pinned together. The flannel petticoat, which generally overlaps, is then tied, the lower end being doubled back about three inches below the feet and secured by safety pins. The little frock is then pulled gently up over the feet, the arms put in the sleeves, and the child turned over for the second and last time to have it fastened behind; lastly the head flannel is applied.

Should this process have been carefully gone through, the child should be warm and comfortable, and quite ready to go into its warmed cradle for a long nap. Its first food from its mother is not necessary for some hours. Later on, bath time should be so arranged that baby is fed immediately afterwards, and should then sleep well. A small india-rubber hot-water bottle is almost a necessity for the first week or two, and should be placed in the cot, at the side of the child, between the folds of the upper blankets. It should be omitted as soon as the child has learnt to keep itself warm, but be at hand in case of need.

GENERAL WASHING AND DRESSING.

For the first week the child should be bathed only once a day, and that in the morning, as it is well, until the cord separates, to keep it and its dressing as dry as possible. The little wound left must be kept aseptic until healed. The clothes should, however, be changed, and the lower parts sponged in the evening.

After a week, a bath may be given with advantage night and morning, and after four or five weeks the temperature of the morning one, beginning at 100°, may be lowered a degree every two or three days, until it is only 80°. This cannot be done without a bath thermometer, as it must be accomplished so gradually that baby is not aware of any change. In the summer, at four or five months, a child will often enjoy it quite

cold. Such children practically never take cold, except by direct infection, and are wonderfully vigorous, with clear, shining skins. It must, however, be given by an intelligent person, and the least sign of blueness or shivering is an indication to return to a slightly higher temperature. A child should love the water, and be allowed to play by splashing about and having the water sponged over its head and face.

When about a year old, if there be a large bath in the house, the child may be put into it, and after the first day or two will probably enjoy it thoroughly.

If a child has not had the graduated bath as described, it is well, after a few weeks, just before taking him out of the water, to give a rapid sponge with water rather colder than that of the bath, and to lower the temperature, gradually, until he can be sponged down with quite cold water while standing in the warm bath. This plan strengthens him and makes him less susceptible to cold, but is less to be recommended, and is generally more disliked by the child. If *after babyhood* a bath once a day is all that can be managed, it should be a cleansing one at night, temperature 90°–95°, ending with a cold sponge down, and a good rubbing with a fairly rough towel. In the morning the child should be rubbed down with a cold wet sponge or towel. Habits of bodily cleanliness are easily learnt, and if all young England were brought up in them from the cradle, this country would soon be considerably cleaner and healthier.

The Skin.—The skin must also be early trained to withstand changes of aerial temperature, and, after a few weeks, especially in the summer, exposure to the air after the morning bath should be gradually introduced, with kicking by the child, and rubbing by way of exercise (see pp. 62–6). This process should be lengthened as time goes on, until a run round the nursery in nature's garb will be a daily treat, and much lessen the child's liability to cold-catching. A little later, a run round the garden, or some short sharp exercise in the open air, should be taken each day, with thick shoes, but with no other addition to the indoor clothing.

Hard Water.—If the water used for cleansing is very hard, it is difficult to prevent a child's skin becoming rough. In towns, rain-water can often be obtained by selecting a gutter running round an out-house, and cutting off about three feet from the pipe which conveys the rain to a gully. Make a long narrow bag or use a strong knitted stocking, fill it with sand for the depth of twelve inches, insert the end of the pipe well into the sand, tie the bag to it securely, and let it drip into a pail. The water will be roughly filtered and be quite clean enough for washing purposes. If hard water must be used, it should have prolonged boiling, or be treated with one of the water-softeners sold, but even then, without great care in attending to all the creases so numerous in a fat baby, chafing will occur. Sometimes it is well to employ grease, instead of the powder, for a day or two; if however, in spite of all care, a child gets very sore and chafed, there is probably some internal derangement,

and a doctor should be consulted. The clear soft skin is one of the greatest attractions of childhood, and on a windy day, if a little cold cream is applied before going out, the tendency to roughness is decreased.

The Hair.—It is well not to wash the hair more than twice a week after baby is six months old, and then to use soft water and superfatted soap.

After birth the hair tends to get of a lighter hue until about two years of age, after which it gradually becomes somewhat darker again. The colour of an infant's hair at birth will usually be a fair sample of what it will be in adult life. The hair will grow better afterwards if kept short for the first three years.

The Ears.—Water should not be allowed to enter a baby's ears, and any moisture noticed after the bath should be removed by a scrap of absorbent cotton-wool, which will dry the ear perfectly without any pressure, and should be continued throughout childhood. It is a bad plan to clean the interior of a child's ear with soap and water, or with the screwed-up corner of a towel or handkerchief. These efforts only tend to push the secretion further in, until it at length presses against the delicate ear-drum, which is most undesirable.

The Nose.—The lower part of the nostrils, if seen to be dirty, should be very gently cleaned with a scrap of absorbent wool dipped in boracic lotion, until the child can be taught to blow its nose.

BABY'S BASKET.

The article known as 'baby's basket' (*Fig. 2*) is a great convenience. It should be large, stand high, and have one or more shelves beneath. It is well to have it made of brown wicker, as it keeps clean, and it is usually lined to match the cradle. If without lids, a cover must be provided, and a serviceable material is a pretty washing cretonne or print. It should have a pin-cushion at either end, and several little pockets in the sides, to hold the smaller articles that are required. The basket should be completely stocked a week or so before baby is expected, in order that all may be ready when wanted. Baby's basket should contain a complete suit of clothes—as will be described—flannel apron, six soft diapers, a hair-brush, a yard of flannel to receive the baby, and an old, soft blanket. There should also be a small (about 10 in. by 6 in.) india-rubber hot-water bottle in a thick white flannel case.



FIG. 2.—Baby's basket.

The fittings proper should consist of:—

- Packet of antiseptic cord dressings and antiseptic powder (boracic, zinc, and starch in equal parts)
- Packet of absorbent cotton-wool (2 oz.)
- Linen thread

Needles, cotton, thimble, and blunt-pointed scissors
 Turkey sponge and square of flannel in sponge bag or box
 Baby or oatmeal soap in case
 Powder box containing zinc and starch powder in equal parts, or Woolley's
 sanitary rose powder
 Pot of grease, e.g., zinc ointment and vaseline, equal parts
 Small collapsible tube of hazeline cream
 Large and small nickel safety pins
 Thermometer, for taking the temperature of bath, food (*Fig. 3*), or room
 One ounce of boracic acid crystals.

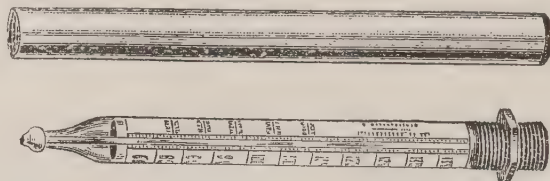


FIG. 3.—Combined food and bath thermometer.

All these can be procured, packed in a box, under the name of 'Our Baby's Basket Fittings,' from Messrs. W. H. Bailey & Son, Oxford Street, London, W.

WARMTH AND QUIET.

Two important points of baby management during its first weeks of life are warmth and quiet. Immediately after birth, the baby should be laid in a blanket previously prepared by being placed in a corner away from draughts, and containing a hot-water bottle. The hot bottle must have two thicknesses of blanket between it and the child, and an airway must be provided. This prevents the initial loss of heat which is often of serious import, sometimes causing jaundice or a dangerous loss of vitality, and the washing and dressing can be delayed as long as is convenient. It must also be remembered that baby has, till its birth, been accustomed to a temperature of 100° , and needs very gradual acclimatization to that of 60° to 65° . After a day or two this is not too low for the air it is to breathe, but for a few days longer, only the face should be exposed, as at this temperature it will rapidly lose its bodily heat and become chilled. This will affect the general nutrition, and, in spite of food, baby will not gain in weight. Baby should therefore be kept from changes of temperature, and not be carried about the house for a few days—until its heat-regulating mechanism begins to get into working order. After this time it can be gradually 'hardened off,' though much care is required in winter (see p. 64).

Quietness is also of great importance, and should be maintained for some time. A baby's brain needs to be kept from all unnecessary impressions, sudden noises, etc., and it should therefore be but little talked to. This may sound harsh, but it is a necessary warning to young mothers. An excited babyhood leads to many serious nervous diseases in childhood, and it is a good plan, for at least three months, to keep the little one away from a nursery full of brothers and sisters, all anxious to nurse and play with baby.

This quietness also applies to a baby's frame. Many people seem incapable of holding an infant quietly, but jog it up and down, and from side to side, without cessation, to the infinite damage of its brain, and often producing vomiting. If a grown-up person would jog herself up and down on a chair for ten minutes without stopping she would never again inflict such a penance on a helpless baby.

Voluntary exercise can do a child nothing but good ; it is the involuntary against which it often protests.

CHAPTER II.

WHAT SHALL I DRESS BABY IN?

Baby's Outfit—Utility and Ornament—Anatomical and Physiological Facts—Position of the Lungs—The Brain—The Bowels—Tight Clothing—The Skin—Material for Clothing—The Layette—Long Clothes—Short Clothes—Walking Clothes.

THE question at the head of this chapter is not one which is left to be settled when baby has appeared. All a young mother's female acquaintances have had something to say upon this weighty matter, and a first baby generally finds an ample wardrobe awaiting it. But curiously enough, this wardrobe is meant to last the child for three or four months only, and what is to be put on at the end of that time no one has troubled to think.

Now, in the months before a first baby is born, the mother often has many quiet days and hours, and did she but know how in a year or two she would look back with longing upon those same quiet hours, she would employ them with a little more forethought. 'Learning by experience' is a thing that most newly-married people get pretty well versed in after a time; but perhaps it may not be necessary, in this way at least, for some of the readers of this little book.

Baby's Outfit for the first two years of life shall now be considered, and wise mothers will probably prepare some, at least, of the second-stage garments.

What mother, rich or poor, does not like to see her baby dressed prettily? Do not some mothers, however, fail to see that true beauty cannot exist without fitness? Nature always teaches this. Animals belonging to cold countries have long, woolly, fur coats, whilst those belonging to hot countries have fine, thin, short-haired coats; both beautiful because both perfectly fitting or suitable. So should it be with clothing, and especially with children's clothing. "Trees is ornament, what we wants is utility," was the answer of an old man in *Punch* when asked why he was cutting down some beautiful old trees. There is some truth in the latter part of the sentence, whatever we may think of the former.

In the preparation of baby's wardrobe we will think first of utility, then of ornament.

DANGERS CONNECTED WITH CLOTHING.

Many a mother has lost her child through want of a little anatomical and physiological knowledge. Let us look at a few points.

1. **The Lungs.**—Most mothers are fully alive to the necessity of protecting a child's lungs, but how many know that the lungs extend above

the collar bone on each side, and come down under the armpits? Did they know it, surely no child of theirs would go about a draughty house, much less the draughty streets, with such low dresses and short sleeves that both these important parts of the lungs are exposed to the risk of a chill, to be followed perhaps by bronchitis and death.

2. **The Skull.**—Every mother is alarmed, and rightly so, if her child falls on its head, for fear the brain should be injured; but how many are aware how thin the bony covering of the brain is? Did they know, surely they would not send their child out to play in the scorching sun, or to ride in a perambulator with a hat which is pushed far back on its head, leaving all the front part fully exposed. The brain, as a consequence, may become so irritated that congestion and fits ensue.

There is preserved in one of our museums a specimen of a baby's skull through which a cock has pecked a hole, showing how thin must be the bone.

3. **The Bowels.**—Many mothers are troubled by a constant diarrhœa or constipation occurring in their babies, who otherwise seem quite well. The cause seems a complete mystery, which is, however, easily solved when it is remembered that a child's bowels are so delicate that the slightest chill may affect their healthy action, and that for this reason they require to be most carefully protected. Half a dozen petticoats with short waists will do no good, for if a child lie on its back and kick, the bowels will often have no protection at all. A knitted belt to reach from the hips to the armpits, and to which the diaper can be pinned, will cling to the child's body and avert all risks.

In older children, a large expanse of thigh and leg left uncovered will lead to the same disturbances, and woollen drawers, fitting closely just above the knees, will give the necessary protection.

4. **Tight Clothing.**—Chinese mothers are often condemned for such cruel bandaging of their children's feet as to stop their growth. Nearer home too, in Italy, the babies are firmly bound round and round with yards of material from head to foot, the arms being fixed to the sides, and are then placed on a pillow to be carried about like a parcel. When the time comes for them to walk, they cannot, as their legs are too thin and weak to support them, and even when they manage, after a time, to toddle along, their legs become crooked and bent.

English mothers are wiser than this, but even they do not always realize the mischief of tight clothing. Some babies are compelled to vomit their food, on account of their tight inelastic binders, which prevent the expansion of the stomach; whilst others cannot take a deep breath nor yawn without pain, for the same reason. Some children, too, can walk only a few yards because of the weight of their boots, or because their little toes are cramped up in an unnatural position.

5. **The Skin.**—Everyone has heard of the naughty boy who painted his dog all over, the poor creature dying in a few hours. But how many mothers have thought how important an organ the skin must be if the cessation of its functions causes death?

Many a child is unable to perspire properly, and get rid of its extra heat, from the weight of non-porous clothing which has been heaped upon it, while many another has caught a chill from the contact of its skin with cold substances, e.g., linen, or cotton, soaked through with perspiration.

WHAT CLOTHING SHOULD BE.

These five points will have shown that the nature of a baby's wardrobe must not be left to mere chance to decide. It must be chosen and made up on clear, definite principles, principles indeed which involve the little one's health and comfort.

Thus all important internal organs must be carefully protected from external changes of temperature.

Large surfaces of skin must be covered, as a superficial chill often causes internal disorders, and the greater the loss of heat from the exposure of large surfaces, the more will require to be generated internally to make up the loss; so that the food which ought to be making the little one fat and plump, is diverted into the production of heat to keep it alive.

All clothing should be porous and light, to allow the skin to act freely, and should, at the same time, be somewhat elastic, fitting the part closely but not tightly.

The material selected should be such as will retain the body heat to a considerable extent, especially remembering that the younger the child, the quicker it loses its natural heat. Without doubt the substance that best adapts itself to these requirements is '*wool*,' and the very mention of the word dispels the idea of muslins and laces, which seems naturally to connect itself with a baby's outfit. At the same time flannel is not so suitable for wear next the skin as woven woollen material of cellular texture which retains air in its meshes.

SCHEME OF CLOTHING.

A simple scheme of clothing for the first two years of life will now be given, based upon correct principles; and while it will form a sound foundation, each individual mother can improve upon it as she will.

The outline shall come first, and a few explanations be given afterwards.

(A)—LONG CLOTHES—27 to 30 INCHES.

- 4 Vests of fine woven wool
- 2 or 3 Flannel Binders and 2 Woven Belts
- 4 Flannel Petticoats or Long Flannels
- 4 Woollen Night-dresses
- 4 Silk or Woollen Dresses
- 12 Turkish Towelling Diapers
- 24 Harringtons' Hygienic Squares
- 3 Head Flannels
- 1 Shetland or Knitted Shawl
- 1 or 2 Woollen Hoods
- 4 Pairs of Knitted Shoes

(B)—FIRST SHORT CLOTHES—23 INCHES.

- Larger Vests of fine wool, thicker in winter than in summer
- Larger Belts, knitted or woven
- 2 Pairs of Woollen Stays
- 4 Woollen Petticoats
- 4 Night-dresses
- 4 Silk or Woollen Dresses
- 4 Pairs of Woollen Socks with long legs
- 24 Larger Diapers (24 in. or 27 in.)
- 6 Pairs of Flannel or Knitted Drawers
- 8 Bibs

(C)—FIRST WALKING CLOTHES—21 INCHES.

- 3 Pairs of Combinations
- 2 Pairs Flannel Stays for winter, or
- 2 Pairs Flannel Straps for summer
- 6 Pairs Knickerbockers
- 4 Woollen Petticoats
- 4 Frocks
- 3 Pyjamas

The first list will look very meagre when compared with the ordinary layettes advertised ; but one advantage of a woollen outfit is that the garments do not crease so quickly, and they are also best washed at home. If the rule be allowed that all clothing worn be first aired by an open window and afterwards by a brisk fire before being again put on, the flannel garments will not need washing so often as those of linen or cotton ; and one vest, petticoat, dress, and night-dress will thus often last a week.

(A)—LONG CLOTHES.

Vests.—The soft woven ones are less irritating than the hand-knitted for the first week or so. They can be obtained at all good outfitters, with long sleeves and opening all down the front. Later on they can be knitted, and are less expensive, as they take only 1 oz. of two-ply unshrinkable vest wool. It has been amply demonstrated that muslin shirts are unnecessary even at first.

Binders and Belts.—A strip of flannel, 5 by 18 inches, with the raw edges left, is used at first, but woven belts which need no stitching are recommended after a fortnight. They can be obtained at any of Jaeger's or the Greenock wool depôts, or knitted at home—as they resemble knee-caps.

Long Flannels.—These should be of soft, warm flannel—six and a half yards making four garments. Pryce Jones usually keeps a good flannel which washes and wears well, but war restrictions have greatly affected these goods. The bodices should have shaped shoulder straps which button and prevent the petticoat slipping down, or else be made with shoulder seams. Long flannels are generally embroidered round, or bound with silk flannel binding. These should be 32 inches long, to turn up over the feet.

Night-dresses.—These should serve also as monthly gowns and be daintily made. The material can vary with the season. For a winter

baby, 'Eukreptic' and 'Astra' flannels are good makes; for a summer one, gauze flannel, or a good nun's veiling.

Dresses or Robes.—These, if care be bestowed on them, can be made as pretty as any mother can wish, and will be far more cosy and soft than starched muslin.

Gauze flannel, delaine, cotton crêpe, good nun's veiling, fine cashmere, and washing silk, can all be utilized. Smocked fronts and wrists are always becoming to infants, or embroidered yokes and wristbands, with tucks and embroidery on the skirt, and soft torchon lace as a trimming. A sash of the same material can be added if liked. Silk as a material for outer garments can be recommended, as it retains heat much better than cotton, and has no starch to irritate the skin.

Flannel Pilehes.—An inexpensive flannel should be bought for these, as they need renewal after a time. They are about 27 inches square, and have herring-boned edges.

Diapers.—Fine Turkish towelling is best for these, as they need not be ironed, and are easily washed. New ones should be boiled before use. One or two packets of Southall's 'Knapkenettes' are useful, or a pound or two of Gamgee tissue. Harringtons' Hygienic Squares are also very absorbent, easy to wash, extremely soft, and not at all bulky, this being an important point as not impeding the straightening out of the legs.

Head Flannels.—It is well to provide at least one of large size: either 45 or 54 inches square, with several of 36 inches.

Shawl.—A large white Shetland shawl is a delightful article, possessing the maximum of warmth with the minimum of weight, and when soiled can be cleaned to equal a new one; but it has the drawback of being expensive. A fine crocheted or knitted shawl is the best alternative, and answers for an outdoor wrap far better than the usual ornamental cloak hanging over the nurse's arm.

Knitted Shoes are generally presented in sufficient number by baby's friends, but are seldom necessary while long flannels are used.

Hood.—For both boys and girls this should be woollen, a simple one being made of a long piece of single knitting with large needles and Shetland wool. This is doubled over several times, and the front rolled back and secured with ribbon.

(B)—FIRST SHORT CLOTHES.

These are generally needed by healthy children when ten or twelve weeks old in the summer, but not for a few weeks later in the winter. Now that so-called long clothes are made shorter, with great advantage to the infant, there is less trouble in converting them. It is better to have a new long-clothes outfit for each new-comer, with the exception perhaps of some of the long flannels, so that if expense be a consideration the short clothes can mostly be evolved from the long ones. It is important that the shortening be gradual, the clothes reaching two inches below the feet at first; and as baby ought still to be carried lying down quite flat, this length will be found to be convenient.

Vests and Belts may not yet require renewal, as they differ only in size.

Stays.—These are made of two layers of flannel, or nun's veiling, according to the season, and may be quilted with a machine. The arm-holes are bound with flannel binding. They should cover the collar-bone and reach to the hips.

Petticoats.—These can consist of a skirt put into a band and attached to the lower edge of the long-waisted stays, and be made of nun's veiling or gauze flannel in hot weather, and Viyella or thin flannel in winter. The lower edge can be scalloped or trimmed with lace.

Night-dresses.—The long ones can generally still be used, though they may need new yokes and wrist-bands ; but if they are made of the thinner woollen materials which were worn over long flannels, the latter must be retained, unless the weather be hot, when a vest beneath will be sufficient. They should be long and full and buttoned at the lower edge in winter.

Dresses.—The long frocks can have a piece cut out above the tucks, an extra tuck being made to hide the join, or, in a plain skirt, the hem can be turned up again and two or three tucks be put in. Smocks will generally have stretched sufficiently to last a few months longer, but yokes will probably require renewal. Later on, when old enough to keep warm by playing, there is no necessity in summer weather for sleeves below the elbow ; remembering, however, what has been said about the position of the lungs, the upper arms ought always to have a woollen covering. Coloured Viyella, which washes well, is a suitable material, as it soils less readily than white.

Socks.—Those known as three-quarter length are best, reaching almost to the knee, and in winter should be worn as well as the ordinary wool boots, unless knitted overall drawers are used. Long-legged knitted boots can be used, to save expense, if preferred. A little later, small pieces of morocco leather or kid can be easily fashioned into dainty little shoes ; and when a child can toddle, leather shoes can be worn, but they must be very soft, with broad and thin soles. Shoes are better than boots for little children, as the ankles are not confined, with moderately thick soles for outdoor wear, and in winter, gaiters to the knee. While a child is well wrapped up in a perambulator, the fewer outdoor garments the better, to lessen the wearisome operation of dressing to go out.

Drawers.—These, whether made of flannel or hand-knitted, should be worn over the diaper, buttoned to the stays, and reach just above the knee. Some of the knitted ones should have stockings attached, and are known as overalls. They are very suitable for nursery and outdoor wear. They obviate the necessity for a second petticoat, and are far superior in warmth.*

* Paper patterns of all garments mentioned in (A) and (B) can be obtained from Miss Mills, 88, Brompton Road, St. Albans, who will also make them up at moderate charges if material be sent.

(C)—WALKING CLOTHES.

A child is generally ready for these at about two years old, some earlier, if they are forward and big for their age.

Night-dresses.—These should now give place to **Pyjamas**, made all in one to button at the back. They obviate all risk of cold, the child being unable to kick them off. Pure flannel in the winter, Viyella or a good Ceylon flannel in the summer, is suitable. It should be supplemented in winter by a long-sleeved vest, or a short flannel bed-jacket, as children of this age generally prefer, and should be encouraged, to lie with their arms uncovered.

Belt.—Same as before. This may be omitted if the combinations well wrap over the abdomen. When badly washed, they often gape just at the part which most needs protection.

Combinations.—These should be of pure wool, woven or knitted—thick in winter, with high necks and long sleeves; thin in summer, with high necks and short sleeves. They can be obtained with the lower part made to button up at the sides, and while reducing the number of garments required, are equally suitable for girls and boys.

Stays or Braces.—The former, which have already been described, can be replaced in very hot weather by straps of double flannel, 23 by 1½ inches, stitched each side, with buttonholes at the ends, the knickerbockers having four buttons, two in the front and two behind to correspond. The straps pass over the shoulders, crossing each other back and front.

Knickerbockers.—Flannel or Viyella in winter, nun's veiling or calico in summer.

Petticoat.—This should resemble the short-coating one, or be in Princess shape in summer, when braces are worn. When skirts reach only to the knee, the *utility* of petticoats is negligible, and they come under the *ornament* section. Warmth is secured by combinations and knickerbockers.

Frock.—Let this be high-necked, with sleeves to elbow or wrist, according to the season; made with a yoke into which the skirt can be gathered for girls, and box-pleated for boys, is the simplest method, while smocks are always becoming.

Easy patterns, taking very little material, and mostly of Kimono style, are advocated and strongly recommended to all young mothers, especially if expense is a consideration.

OUTDOOR CLOTHING FOR CHILDREN.

The more exercise a child takes when able to run about, the less clothing is required to keep it warm, perspiration tending to weaken the system and render it more liable to chills. Clothed in one layer of wool from neck to knees, with the additional protection of the belt to the sensitive abdominal organs, a child of this age in very hot weather requires additional clothing only for the sake of appearance. For this reason silk or cotton upper garments are generally preferred for summer wear in towns.

For seaside or country wear, when a child runs alone, and may choose to rest upon damp grass or wet sand, only woollen clothing is admissible, and the simplest garb consists of combinations and belt, flannel stays or straps, knickerbockers and frock. The two latter should be alike, and made of woollen beige or fine serge. The frock should hang straight from a yoke, confined at the waist by a belt into which, when crawling or paddling, the skirt can be tucked.

At this age it is of great importance that in summer the whole head should be well protected from the sun's rays. Large pith hats with turned-down brims can be obtained, which shade well and yet provide for plenty of air beneath. A cabbage leaf placed in the crown is a homely but useful precaution.

Pinafores have not been mentioned, as they have no immediate bearing upon health, except that overalls and crawlers, in which a child can do whatever it likes, are much to be commended as aids to muscular development and healthy appetite. Made of blue serge, or red turkey twill, they are almost indestructible.

CHAPTER III.

WHAT SHALL I FEED BABY ON ?

A Mother's Responsibility—Nature's Food—The Expectant Mother—Treatment of Mother's Nipples—The Nursing Mother—Breast Feeding—Regularity of Meals—Suckling—Cracked Nipples—Excess of Milk—Why Baby Cries—Colic—Insufficient Milk—Bottles—Twins—When a Mother should not Nurse her Baby—Weaning—Diet Tables—Starch—Fats—Protein—Beef Tea.

THE question at the head of this chapter should be a matter for consideration months before the birth of the child.

A mother should know that, as soon as the germ of a new life has started, her responsibility has begun, and that for the next nine months she must order her life in such wise that she is laying good foundations for her little one's mental, moral, and bodily health. Fortunately, although personal inclinations may suffer, her own health will greatly improve, and she will be fit to take up the new duties that will await her after the child begins its separate existence.

Nature, however, has never contemplated any sudden cessation of a mother's responsibility at birth. Up to this time the child has not used its lungs, its digestive system, or its senses of sight, hearing, touch, etc. It has floated in a warm, sterile bath, has experienced no loss of heat, and has obtained every necessary of life from the blood of its mother.

At birth, the child's lungs have to take on their duties and obtain their oxygen from the air, its heart has to develop quite new functions, its heating mechanism has to learn to accommodate itself to the sudden withdrawal of heat from its surface, and all its senses receive such definite stimuli that the strain on the nervous system is considerable. Therefore, with such momentous changes inevitable, Nature has decreed that there shall be *no* sudden change in the most important part of the child's development—its nourishment.

Long months before birth the 'placenta,' or temporary supply-store in which the mother's and infant's blood is intermingled, has manufactured a special substance which circulates through the mother's system until, in due time, it arrives at the breasts and at once begins its work there, stimulating them and preparing them for action later on. When birth occurs the breasts are ready.

Now, as the child's alimentary canal has, so far, had no duties to perform, it has to be very carefully educated, and therefore the first secretion of the breasts is not exactly milk, but a nutritive fluid very similar in composition to that of the mother's blood, upon which, up to the present time, baby has been nourished. It is yellow, thicker than milk,

and on being taken into the stomach most of it is absorbed at once, without any digestion. Each day sees this 'colostrum,' as it is called, gradually altering in character and becoming more like milk, till after five, six, or seven days the secretion is milk—but mother's milk, not cow's milk. During this time the various digestive glands in the stomach and intestines have been so gradually taught their duties that they can settle down to them without any trouble.

For nurses and mothers, therefore, to interfere with Nature at this early period is to run unjustifiable risks. The enormous infant mortality from nutritional defects up to three months is largely due to initial blunders during the first week of life. Even should the mother's health be likely to forbid lengthy nursing, it is physiologically correct, for her own sake, to allow the mammary glands the satisfaction of fulfilling the primary duty for which they have so long been preparing.

The mother who has followed the above argument, and realized its significance, will now have no difficulty in answering the question at the head of the chapter. But she may ask: *Why should I continue to feed my baby after its digestive organs have been well started?* Because, although all species of mammals feed their young on milk, no two species have the same *kind* of milk. All contain the necessary protein, milk-sugar, and fat, but in different proportions according to the needs of their young. For example, the puppy has to double its weight in nine days, so its mother's milk contains a great deal of protein or tissue-forming material; while the reindeer, which lives in a very cold climate, has a large proportion of fat in its milk to help to preserve warmth in its young. The constituents of a *mother's* milk are accurately designed for a *human* baby, and it cannot be too strongly insisted upon that the milk of no other species is really suitable. Cow's milk, which is the most convenient to use, is but an expedient, and many infants are totally unable to thrive upon it without great modification. Further, mother's milk contains a special substance for building up a baby's highly organized brain and nervous tissue, and cow's milk is deficient in this substance. It is also a living food, and practically sterile, two points which only breast feeding will ensure, but of which the importance to the vitality of the child cannot be over-estimated.

It is also stated that a breast-fed baby is practically immune from infectious diseases, e.g. measles; that it is not even exposed to numberless dangers with which hand-fed babies must cope, and, finally, that of the one in every six infants that die in the British Isles before they are a year old, the vast majority are hand-fed. It must also be remembered that there is a peculiar tie of affection developed between mother and child which lasts through life.

THE EXPECTANT MOTHER.

The expectant mother, having wisely decided to do all in her power to continue the nourishment of her child after its birth, will, during the nine months of preparation, live on plain, nourishing food, and avoid all spicy

and stimulating articles of diet. Amongst the middle classes, it is more important to guard against over-feeding than the reverse. One meat meal a day is sufficient, the other two meals containing protein in the form of fish, egg, cheese, or beans. Plenty of water should be drunk, preferably an hour before meals and before breakfast. Alcohol is poisonous to the child: tea and coffee should be strictly limited. Fads should be discouraged. Self-control during pregnancy is a great asset in the mental health of the child.

As there is more waste matter than usual passing into the system, the kidneys, bowels, and skin must be kept active to get rid of it, and this for the sake of the child as well as the mother. Plenty of water, as advised above, will flush the kidneys. Plenty of fruit, vegetables, and brown bread will help the bowels, but sometimes the pressure upon them makes it necessary to take simple aperients, e.g. pure paraffin, liquorice powder, or senna pods; castor oil is not advised except in cases of poisoning by some food which has disagreed, or in diarrhœa, as its secondary action is constipating. Daily baths, in which the skin is well soaped and rubbed all over, finishing with a colder sponge down, are helpful, and during the last ten days a warm sitz bath at night is advised.

Digestion is aided by a sufficient interval between meals, and by regular exercise; household work and walking being especially useful. This strengthens the muscles and prepares them for the strain at birth; but lifting weights, reaching the arms up above the head, and long standing are detrimental, and over-fatigue must be guarded against. If flatulence be troublesome, ten grains of bicarbonate of soda after meals may be taken.

The mother's blood requires extra oxygen in view of its increased work, and therefore she should live as much as possible either out of doors or in front of widely-opened windows. She will soon become wonderfully acclimatized, and will not feel the cold even in winter; but to begin with, a warm coat and mittens and perhaps a foot-muff may be required. All stuffy rooms and hot places of amusement should be avoided, especially as a long night's rest of at least eight hours is advisable. If leading a busy life, rests of short duration should be arranged, and an hour's nap in the afternoon is time saved in the gain of energy for the rest of the day.

Clothes should be light and loose, with no tight bands, but made to hang from the shoulders, and as far as possible should be washable. About the fifth or sixth month a well-fitting belt, to support the weight, is a great comfort. The teeth should be examined and treated early in pregnancy, as any decay or suppuration round the gums is very detrimental and a frequent source of sepsis. It is a good plan to take a teaspoonful of saccharated lime-water, well diluted, twice a day during the later months, as the child drains away lime salts from the mother's tissues; if anæmic, a little iron is also indicated.

The nipples themselves require a little preparation. If small and depressed, it has been well advised to place over them the bowl of a long clay pipe, its edges greased to prevent slipping, and to apply suction by

the mouth through the stem. This should be done daily for the last six or eight weeks. The nipples should afterwards be bathed, and a little lanolin or glycerin and water rubbed in, and all pressure avoided. The more supple they are, the more ready for work.

A mother must not think pain or serious discomfort is the rule at such a time, and in case she is troubled with anything which does not quickly yield to simple hygienic rules, should consult her doctor at once. She may thus avoid much subsequent trouble. Lastly, remembering the character-building that is proceeding these nine months, a mother should endeavour to be calm and cheerful under all circumstances, to keep a firm grip over her nerves and temper, to let her mind dwell only on things of 'good report,' and to "give many a loving thought by way of welcome to her child."

THE NURSING MOTHER.

Having, therefore, considered the momentous question at the head of this chapter, and having decided, for the sake of her child, to carry on its nourishment herself, a mother will resolve, after baby comes, to :—

1. *Take plain and nourishing food.* Avoid highly-seasoned dishes, pickles, acid drinks, or raw vegetables, which might affect baby adversely, and gradually advance to plenty of cooked fruit and vegetables. Take no alcohol, of course, but about a pint or two of extra fluid, e.g., milk and soda-water, gruel, or cocoa, though never more than can be easily digested. If the appetite is small, a more concentrated food sometimes acts better, and Virol, Sanagen, or Plasmon may be added to the diet with good effect. Flatulence or indigestion is a signal for rather less food. Half a pint of pure water half an hour before meals is of service. It has been proved that too frequent meals upset digestion and lessen the milk secretion.

2. *Take trouble to feed baby 'by the clock' in the day,* trying to get it to sleep all through the night from the earliest days. Baby, at the very beginning, can be moulded as you wish, but once let a habit be formed, good or bad, and it is exceedingly difficult to break it. Regularity in feeding is one of the most important factors in successful baby-rearing, and the long rest to the digestive organs, when there is no night feeding, is of great value.

3. *Take sufficient rest.* An afternoon nap and a long quiet night must be secured. The nervous system of both mother and child is enormously strengthened by uninterrupted sleep at night.

4. *Take care to avoid excitement or mental worry.* The quantity and the character of the milk is often much altered by mental disturbances, and, in extreme cases, it has caused convulsions. Should a mother be much upset from any unavoidable cause, it would be well for her to draw off the milk with a breast-pump before again allowing the child to take the breast. A bottle of whey will do no harm, and obviate risk.

5. *Take plenty of fresh air into the system,* by lying out of doors or before a widely-open window, and after a month taking gentle exercise. Vigorous

exercise should be postponed for about eight weeks, when the internal organs should have regained their normal conditions.

NURSING BABY.

Breast feeding should be somewhat as follows :—

Rest for twelve hours after baby's birth. The child does not require food, but a few teaspoonfuls of water may be given once or twice.

Then let baby suck for four or five minutes at each breast every three hours *by the clock* until the last thing at night. There should be seven meals, and the best times are generally 5, 8, and 11 a.m., and 2, 5, 8, and 11 p.m. The child must be awakened punctually until the last meal, and then allowed to sleep on until 5 a.m., or even later. If more convenient, the meals can begin at 6 a.m. At this early period there will not be much food obtained from the breasts, but what there is, as before explained, is extremely valuable to the child. Continue with this regular routine. If baby should wake in the night, it should be changed, turned over, and, if necessary, could have a few spoonfuls of warm water, but must not be fed. In a very few days a regular periodicity will be established, both in the receptive organs of the child, and in the producing organs of the mother. She may not think there is much milk secreted beforehand, but the stimulus applied to the nipple by the hungry child will at once evoke a response in the gland, and the milk will be secreted.

It cannot be too strongly insisted upon that it is not food, but regular stimulation, which produces milk. Of course good food is necessary, but if the milk supply is scanty, and vigorous stimulation is applied, the supply soon augments. A three-hour interval means a hungrier child, stronger sucking, and consequently a better supply; and it has been proved that the total quantity gained by the infant is greater than with shorter intervals, so that it gains weight well. The gain to the mother by seven instead of ten nursings is also considerable, as the glands get a longer period of recuperation, and are less likely to feel any strain later on. Both breasts are advised at each nursing, unless there is a free supply, because when stimulation is applied to one nipple the milk is secreted in both breasts. The knowledge of this fact is of practical use when twins arrive, as by a little manipulation both children can be fed at once.

By five or six weeks it should often be possible to reduce the meals to six, the best times then being 6, 9 a.m., 12, 3, 6, and 9 or 10 p.m.; while after three months many children thrive splendidly on five meals at intervals of three and a half hours.

While nursing baby the mother should have a second pillow to raise herself a little, and should turn slightly towards the side from which the child is going to feed. The infant's head should rest upon her arm, and she must put the first and second fingers of the opposite hand above and below the nipple to prevent the nose being pressed upon, or baby will be unable to breathe. A vigorous infant sometimes almost chokes itself in its haste, and it may be necessary to withdraw the nipple for a moment to allow it to take breath. A weakly child, on the other hand, may not

suck strongly enough, and in that case steady firm pressure on the breast may assist. Such children will probably need careful teaching *how* to suck, the nipple must be adjusted to fall exactly in the right position, and, if depressed, it should be drawn out first by means of the pipe bowl before mentioned, or an 'Infantibus' rubber nipple shield (*Fig. 4*) should be used.

Eight to ten minutes for the meal is sufficient if the child is in earnest, but a few more minutes may be allowed, by which time it should be getting sleepy and should at once be placed in the cradle. The right side is best for an hour, as the distended stomach will not then press upon the heart. It

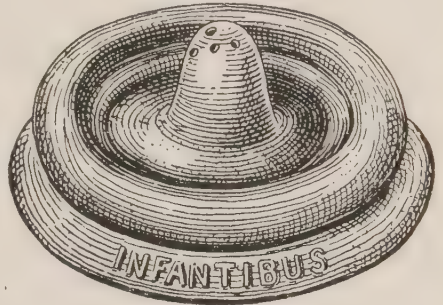


FIG. 4.—'Infantibus' rubber nipple shield.

is of the greatest importance that the child's mouth be closed, and thus the good habit of breathing through the nose be early established.

After each nursing the nipple is gently sponged with warm boracic lotion, thoroughly dried, and then smeared with the cream. If comfortable after a few days, washing will suffice. The nipple must be covered to prevent chill the instant the child's mouth is removed. A broad bandage, with a pad of wool over each breast, should be worn while in bed. The slightest crack on the nipple should at once be treated, as, if neglected, it may lead to an abscess of the breast, and such intolerable suffering that nursing has to be abandoned. It is advisable, for a day or two, if any cracks have appeared, to use a glass or india-rubber nipple shield, enlarging the hole at the end of the teat that the child may get the milk easily. If there is great difficulty in making the child suck with a shield, the milk can be drawn off and given with a spoon or pipette. The crack should be kept quite dry, frequently painted with Friar's balsam or tannic acid in glycerin, and touched occasionally with blue-stone, washing off all applications before nursing.

For the first few weeks the flow of milk is about a pint in the twenty-four hours; later it may increase to two pints. Some mothers, especially at first, have more milk than the child can take, and it runs away, causing great discomfort. In such cases it is well to diminish the liquid food, and to press the surplus milk out of the breast before the child takes it, as the milk which has been the latest secreted will be the best. It may even be well to draw off some of the milk with a breast pump if it be giving rise to fever, bad headache, or mental disturbance; but things usually right themselves in a day or two, and the demand will equal the supply.

WHY BABY CRIES.

Some mothers complain that baby is 'always crying,' and they therefore conclude it is always hungry; but, in point of fact, there are many reasons why a healthy baby may cry. For example:—

1. It may have been too long in one position and is cramped, or may want its napkin changed.

2. It may have a tight band somewhere, or a pin with an unprotected point running into it.

3. It may be too hot or too cold.

4. It may have the wind or the 'gripes,' i.e., colic.

5. It may be hungry.

Now, before supposing the last to be the case, unless indeed baby's food is really due, it is best to exclude the other four reasons. The proper remedies will be :—

1. Turn baby over on its other side in the cot and turn its pillow, and change its napkin if soiled.

2. Examine its binder, also examine the safety pins and see that they are quite secure, of course assuming that no one is allowed upon any pretext to put ordinary pins into the child's garments.

3. Feel if it be hot and perspiring ; if so, take off a blanket or head flannel : if, on the other hand, it be chilly, take it up, warm it by the fire, wrap it in a hot blanket, and put a hot-water bottle in its bed, before laying it down again.

4. Place the child over your shoulder, gently rubbing its back, or put it upon its stomach on your knee ; if it bring up the wind freely it will be comforted, and probably drop off to sleep.

If this be insufficient, and the child's face be of a bluish hue, its eyes and mouth twitching, and its extremities cold, while its cry is peevish and in paroxysms, give it half a tablet, i.e., $2\frac{1}{2}$ gr., or as much as will lie on a threepenny piece, of bicarbonate of soda in a tablespoonful of warm water, dill, or peppermint water, and turn the child stomach downwards on an india-rubber hot-water bottle laid upon your knee, and the attack will probably soon be over.

Should baby have brought up any sour-smelling milk or curds, it is probably taking more than it needs. Of course, if the mother has been persuaded to give baby 'just a little,' it will probably stop crying for a short time, simply because the warm fluid proves grateful, but very soon matters will be worse than ever. Why ? Because the mother has been adding fuel to the flames ; baby's digestion is at fault, and, instead of giving the stomach a rest, she has given it still more work to do. It will be best to shorten the time at the breast by several minutes, and it is generally wise to omit one meal altogether, and give a few tablespoonfuls of boiled water instead.

5. The child will probably have just awoke from a sound sleep, and its cry will be loud and continuous, whilst it will take the breast eagerly and steadily. If, however, the hour for feeding has not yet come, the child must be kept waiting, and often its attention will be diverted by changing it before a fire and allowing it to kick and enjoy the warmth.

If a child when awake cries frequently, e.g., every hour, yet has no symptoms of wind or sickness, and takes to the breast eagerly, the milk is probably poor in quality, even though sufficient in quantity. The

mother should, in such cases, try to improve the quality of her milk by taking rather more protein food, as eggs, meat, fowl, with Sanagen and malt extract.

The weight must be considered the best criterion as to whether the milk is nourishing the child properly. If, day after day, there be no increase in weight, even though the child seem contented, a doctor should be consulted, who will probably examine some of the milk and decide if nursing should be supplemented.

A baby will sometimes take its food very well, but directly afterwards will scream, draw up its legs, have a great deal of wind, and afterwards green diarrhœa. Here there is something wrong with the milk; perhaps the mother has eaten some indigestible food, or drunk something acid, or may either need an aperient, or have taken one which has affected the child. Sometimes the milk in the ducts round the nipple may be stale, and drawing off two teaspoonfuls before the child sucks may prevent the symptoms. Occasionally the milk is too rich, when a tablespoonful of water containing 10 drops of saccharated lime-water given before nursing is useful.

INSUFFICIENT MILK.

One of the most frequent complaints in breast feeding is that a mother has not sufficient milk. The child will suck till it is tired, then doze off; but, at the first attempt to move it, will wake again, suck furiously, and then drop the nipple with rage because unable to get what it wants. The first thing to do is to review the situation.

1. *Has the milk supply been properly established?* It is often forgotten that in first confinements, and in mothers who are not very young, the establishment of an adequate milk supply is considerably delayed. The methods previously given should be steadily persevered with for a fortnight or even three weeks. If at the end of a week the child is not getting on, a small meal of whey and cream (p. 38), or of fully peptonized cow's milk, should be given *from a spoon* immediately after baby comes from the mother. To give a bottle is to court defeat. It is so much easier for the child, that it will not try to get its food from the breast, and the main incentive to efficient secretion is therefore irrevocably lost. It may be that the nipples are so small and depressed that the child cannot get a good grip. If the advice given on page 18 has been followed, this will have been obviated, but if not, these measures should at once be started. The 'Infantibus' shield mentioned on page 21 is of very great service, if the child be strong and hungry. The shield clings by suction to the breast, and will draw out a nipple in a day or two. It must be scrubbed and boiled each day, and kept in sterile water.

The food question, which is generally the most important in the eyes of relatives and friends, is greatly over-estimated. It is of no practical importance the first week or two, except amongst the very poor who have been almost starved right up to the birth, and whose blood is therefore impoverished. A sufficiency of liquid must be taken, but not to the pitch of discomfort.

The last, but a most important point to be investigated in delay of a good supply of milk, is as to whether a sufficiency of will-power has been exerted. The function is largely dominated by the nervous system, i.e., stimulation by the child to the nipple sends messages to the brain, which responds by reflecting orders to the gland to secrete milk immediately. It can be easily understood that the higher nerve centres, through the mind and will, can therefore strengthen or weaken the messages sent back. A woman grimly determined at all costs to feed her child will generally manage it, if she knows sufficient of the mechanism to give the breasts a chance.

2. *Has the milk supply, though well established, and the quantity sufficient whilst in bed, fallen off when the mother begins to get about?* Here the functional activity of the gland has been well established, but in many cases the mother or nurse has been too timid to follow the advised routine, and the usual two-hour intervals, involving at least ten periods of stimulation to the gland in twenty-four hours, has proved too much for it. There has not been sufficient time for the gland to recuperate between the feedings, and it is getting exhausted. Perhaps a bottle has been given occasionally to give a rest; but it is unwise to destroy the regularity of the stimulus for at least four or five weeks.

To lengthen the periods between feedings is the first thing, and must be accomplished gradually for the sake of the child, in whom you have to uproot a firmly fixed habit by the plan already followed. Feed every $2\frac{1}{2}$ hours for three or four days, then every 3 hours, and if the child has contracted the habit of being fed in the night, lengthen the interval each night. This will need some tact and perseverance, but it is not the fault of the child. Probably, being hungrier, it will get rather more, but if after five to seven minutes at each breast it is still unsatisfied, give one tablespoonful of boiled, whole, citrated milk immediately it comes from the mother. Weigh it every second day for a little while, and if gaining less than half an ounce a day, give one and a half or even two tablespoonfuls of the milk after each meal. Do not, however, let the weight increase more than one ounce a day. This plan, if coupled with the other suggestions given below, often enables the breasts to recover their tone, and the supplementary feeds can be omitted.

Later on, there may be a shortage at a certain time of the day, often in the evening, and a bottle can be given at that feed, but the quantity must be kept small, to correspond with the small amount probably given by the mother. In all cases of doubt, e.g., when the child is contented, but does not gain weight well, has small motions, and does not pass much water, it is useful to give what is called a 'test-feed.' The child is weighed immediately before a meal from the mother, and again immediately afterwards. It is not necessary to undress it, but the scales must be accurate. The difference represents the amount of milk taken.

It may happen that failure to gain weight arises from over-feeding, in which case there may be vomiting, diarrhoea, perspiration, and the passing of much water. In some of these cases the mother has thought

she had very little milk, but the scales have recorded a large amount. A reduction in the number of meals, or in the time spent over them, will be necessary in this case.

With insufficient milk the food of the mother may require revision (p. 19), remembering that though she must be well fed to prevent exhaustion, yet to saturate the blood with nutritive material will not of itself cause functional activity of the breasts. This is provided through the nervous system, and explains the enormous importance of sufficient rest and freedom from worry in securing a good milk supply.

A good sleep in the afternoon, with the baby in charge of someone else, and a night of at least nine hours, to allow for waking for baby's early morning feed, should be secured, and then plenty of exercise will do no harm. Some hours should be spent out of doors, and fresh air be allowed in all living and sleeping rooms.

After two months a bottle should occasionally be given, to accustom the child to it in case of need. This should be modelled on the rules given below on weaning. If there be any objection to it, it must be regularly given once a day till the dislike is overcome; but if only the seven meals at first, and six after six weeks old, are given, a mother will be more likely to have plenty for her child for a longer period, so that there will be no necessity for its regular employment.

If there are twins, the possibility on page 20 must be remembered. In any case both should get their start in life from their mother, even if later on it may be necessary to give alternate feeds from a bottle. Many mothers have successfully fed both children for some months.

The nursing of a baby by its mother is therefore to be ensured by all possible means. Breast feeding is of national importance, and public opinion should be educated up to the point of considering it a disgrace for a woman to neglect this most obvious duty without the gravest cause. Even a few weeks of nature's food will give the child a good start, and it will do better than one fed entirely by hand.

There are some conditions under which a mother should not nurse her child :—

1. If she be consumptive or markedly scrofulous.
2. If she be suffering from any acute disease, e.g., typhoid fever, or inflammation of the lungs.
3. If she be in a state of great general debility.
4. If, after a fair trial, she have excessive back-ache, faintness, or continued prostration; or if her periods should return profusely.

WEANING.

This process, in a breast-fed child, really consists of a gradual education of the digestive organs, teaching them to deal with substances not present in mother's milk, but which will, later on, form important parts of the diet. The education should begin at six months in average children; a little later in backward ones. If possible it should not take place in July, August, or September, as epidemic diarrhœa is then much more prevalent.

The first lesson will be to deal with *the casein of cow's milk* instead of that of mother's milk. Of course, those children who have had a bottle earlier will have already learned this lesson, but for the entirely breast-fed child up to this time, proceed as follows:—

Turn to the Whole Milk Table for its age, i.e., 6 months. (If below the average weight as seen in the weight-charts, begin at a few weeks younger.) Take half the quantity of boiled top-milk = $2\frac{1}{2}$ oz., add 5 gr. of sodium citrate and one ounce of boiled water. Give this for the mid-day meal instead of the breast. If it agrees, add on alternate days another tablespoonful of milk, till you have 5 or $5\frac{1}{2}$ ounces. Then omit a tablespoonful of the water and replace it by milk; repeat this on the second day, and you are now giving whole, citrated milk. Use the same amount (5 gr.) of sodium citrate throughout. Next, reduce this sodium citrate by one grain on alternate days till baby can dispense with it altogether. The first lesson is now learned. True it has taken about three weeks, but all education should be slow and sure. A very strong child may be able to learn more quickly, but any discomfort will need retracing of steps. The quantity of this meal can be gradually increased according to the diet table.

The next lesson is on *sugars*. Baby has, so far, been having only milk-sugar, but now it must learn to digest cane sugar. Give one quarter of a teaspoonful of castor or granulated sugar in the bottle one day, adding a little more each day until a level teaspoonful (1 dr.) is reached. After a week of white sugar begin again with Demerara, and a little later still with malt sugar. This may be any good extract of malt from the chemist. If the kind of sugar is suddenly changed the child will often be a little uncomfortable, but made gradually there is no difficulty.

The next lesson has to do with *starch*. At seven months, give in the one bottle so far allowed for in the day, one teaspoonful of barley jelly. This is made by mixing one and a half ounces of Robinson's prepared barley in one pint of water, boiling for forty minutes, making up to one pint again, and straining whilst hot. When cold it forms a jelly. The next day give two teaspoonfuls, the next three, and finally four. In a few days vary this by giving oatmeal jelly, made in exactly the same way, but using fine oatmeal. A week later a tablespoonful of one of the malted foods (p. 57) may be used, and as soon as some teeth are through, a dry crust or finger of baked bread or rusk may also be given once a day to gnaw, just before or just after being fed by the mother. By this time the child will probably be eight to eight-and-a-half months old.

Fats form the next lesson. The bottle may now have occasionally, instead of the starch food, some yolk of egg beaten up in it, beginning with only a quarter of the egg, and if it agrees, increasing to half or even more. A little butter or margarine may also be spread on the crust or rusk.

At nine months the mother will probably find it wise to substitute bottles for two meals instead of one, and then every few days to add yet

another, till it is soon having all its meals from a bottle. If, however, the mother be strong and well there is no objection to her continuing to give one or two meals herself for a couple of months longer. Starch food may be added to one other bottle besides the mid-day one, and this may sometimes be omitted and a spoon meal given instead. This can be a steamed custard one day, a teacup of veal or chicken broth with a rusk or crust after it another, and a cup of boiled custard another, while by ten months, Nursery beef-tea with a tablespoonful of sieved potato may be tried. Some children object to the flavour, but will take it with a little sugar.

By ten months five meals are sufficient, and the use of a cup or glass should have been taught, although it is easier to be sure that the prescribed quantity of milk has been taken when a bottle is used for some of the meals. The 'Ideal' feeding cup (*Fig. 5*) is a useful contrivance at this intermediate stage.



FIG. 5.—Feeding cup.

DIET AT ELEVEN MONTHS.

- 7 A.M. Milk, 6 ounces.
- 10 A.M. Milk, 8 ounces, with a tablespoonful of one of the malted foods.
- 1 P.M. A custard, made with one egg to half a pint of milk, alternating with a cup of broth, beef-tea, or weak gravy from a joint (cleared from fat), with a crust, or baked bread to eat.
- 4 P.M. Milk, 7 or 8 ounces. Rusk with butter on it.
- 7 P.M. Same as at 10 A.M.

DIET FROM TWELVE TO EIGHTEEN MONTHS.

- 7 A.M. Milk, 8 ounces. Rusk or hard biscuit, buttered.
- 10 A.M. Milk, 8 ounces, with yolk of egg beaten up, piece of baked bread or crisp toast.
- 1 P.M. Beef-tea or broth, with stale bread and a saucer of junket and cream, alternately with gravy and sieved potato, and saucer of milk pudding, or a one-egg steamed pudding and baked apple.
- 4 P.M. Milk, 8 ounces. Plasmon biscuit, or Allenburys' rusks or toast buttered.
- 7 P.M. Milk, 6 ounces, with malted food or yolk of egg, if not given previously.

DIET FROM EIGHTEEN MONTHS TO TWO YEARS.

On waking. Milk, 6 ounces, and a biscuit.

Breakfast (about 9 A.M.). Milk, 8 ounces. Lightly-boiled egg, toast, and rusks buttered, finishing with a little jam, without skins or pips; or occasionally, a tablespoonful of well-boiled oatmeal, wheaten porridge, or Quaker oats, with cream and milk as before, and a little bacon-fat on bread if liked.

Dinner (1 P.M.). Beef-tea or gravy with toast or baked bread, junket and cream, or custard pudding made with a few bread-crumbs in it; or half an ounce of underdone, fresh meat, white fish, or chicken well pounded up, also potato or cauliflower, sieved, gravy, and a little baked or stewed apple and cream.

Tea (5 P.M.). Milk, 8 ounces, flavoured with cocoa, if liked. Baked bread or rusks with butter, biscuits, and a little fruit jelly.

Bedtime. Milk, 6 ounces.

N.B.—In all the diets water is supposed to be given in small quantity with the mid-day meal, and, in hot weather, the child should be allowed as much as it likes an hour before meals. One or two or more ounces should also be regularly given at night and morning from infancy.

The three specimen diets given above do not at all include every article of food which may be given, but up to two years of age certain principles must be recognized.

Starch is not well assimilated before this age, and children are generally over-fed in this item and under-fed in the more important proteins and fats. This latter fact is unfortunately true of the whole of childhood, especially in schools and public institutions. A certain amount of starch is required, but it is of great importance that the bulk of it should be given in such form that chewing is absolutely necessary. This has three advantages: (1) That it causes the saliva to mix with the food, this partly digesting it before being swallowed; (2) That it causes the child to form the good habit of eating slowly; and (3) That it causes good muscular development of the jaws and surrounding parts, securing good teeth and healthy throats.

Fats, especially animal fats, are very necessary in childhood. Cream is invaluable, but if unprocurable, the yolks of eggs, butter, or margarine must be more utilized. Sometimes it is well to let the whole household supply of milk stand for three hours, and the children's portion is then taken from the top. There is, unfortunately, a great prejudice against margarine. The best brands are absolutely pure and wholesome. It is made from nut fats, and is frequently analyzed to ensure its purity. Its cheapness is such that no child should be stinted in this valuable food.

Protein, in the form of meat, may be postponed till after two years if it is disliked, but, in this case, the mother must study food-values so as to ensure a sufficiency of protein in the diet. Vegetable protein in any quantity is too difficult of digestion for young children, so that milk and eggs would have to be increased. After illness, especially measles and whooping-cough, the ordinary quantity of protein in the diet should be somewhat increased for a time by extra raw meat-juice, dried milk, Plasmon, eggs, or even fresh meat.

Quantity. It must be remembered that food is given for three things only: growth, energy, and heat, and the last absorbs the most. When less heat is required, as in hot weather, or when a child is shut up in hot rooms, or is very warmly clothed, less food is needed, though more water. When little exercise is taken, as in illness, or in the case of stolid, slow-moving children, less food is also required. The reverse also holds good. A very active child, always jumping about or running and climbing, who is also growing very fast, especially if the weather is cold and it can keep itself warm without many clothes, that child requires an ample diet to correspond with its expenditure of energy.

In this connection a mother must therefore prepare her own diet-sheets, remembering that a forward, active child of sixteen months may require the diet scheduled for eighteen months, while a small child of eighteen months may only need the diet outlined for a twelve-months baby. She must also bear in mind that indigestion, feverishness, or diarrhoea will demand a return to a simpler and much smaller diet for a time, with as much water as the child wishes for. It may be that, unconsciously, she may have been giving the child more food than it really required, and this may be Nature's method for getting rid of some of it, and warning the guardian to diminish the allowance.

Times. The times of the meals may have to be modified in some households, but the principle involved is to have regular intervals between them as far as possible, four hours not being too long. There should be no hurry over the children's meals, and for this reason it is sometimes wiser to give breakfast after the early morning rush is over. Of course, if someone has leisure quite early, the milk on waking can be omitted, and be given as lunch with a biscuit or piece of chocolate, while breakfast then begins the day.

The same principles as to diet should be continued after the child is two years old, and a *definite quantity* of milk should still be taken, one to one-and-a-half pints being a good average. No feeding between meals should ever be allowed, either in the form of biscuits, fruit, or sweets, though if made part of the meal, these are quite admissible in reason. A slice of raw, peeled apple eaten after starch foods is useful to clean the teeth, and may be increased till a whole raw apple is eaten daily. No seasoned dishes, tea, coffee, mustard, or pepper, should be permitted during early childhood.

Nursery Beef-tea.—This method, which can be carried out in the nursery, is strongly advised. Cut up four ounces of best rump-steak into strips, and finely shred them. Soak for fifteen minutes in five ounces of cold water with a little salt, then heat very slowly, stirring all the time till the thermometer registers 130°. The juice will be all extracted and the meat left white. Strain, and remove the fat by drawing tissue-paper across the top. The albumin of beef-tea coagulates at 150°, so it should never reach this heat.

At this age Invalid Bovril, Oxo, or Lemco may occasionally replace the home-made beef-tea with advantage, inasmuch as they contain certain of the nutritive properties of beef that are excluded from the latter.

CHAPTER IV.

WHAT SHALL I FEED BABY ON NOW ?

Feeding for the First Ten Days—Varieties of Milk available—Composition of Milks—Differences and Necessary Modification of Mother's and Cow's Milks—Details of Feeding for First Ten Days—Whey Feeding—Peptonized Milk Feeding—Diet after Ten Days—Modified Milk Table—Whole Milk Table—Foster Mother Feeding—Regularity—Apparatus for Hand Feeding.

IT is to be hoped that no poor baby will be wilfully deprived of its birth-right by any mother who has carefully read the preceding chapter, especially pages 16–17, and it must once again be insisted upon that the most important period in the life of any individual is *the first ten days*, during which vital functions are getting under way. Some infants are born so strong and capable that they can accommodate themselves to almost any circumstances ; but many, even if they do not succumb, are doomed to suffer pain and discomfort, certainly for months, and often for the rest of life, by the misguided attentions of their first guardians. It is impossible to tell at birth whether an infant has strong or weak digestive organs, and therefore it is infinitely wiser to assume that they are weak until they demonstrate the contrary.

Unless the mother be acutely ill, therefore, she should use every scrap of determination she possesses to herself give the digestive organs of her child their first lessons with the material Nature has provided for the purpose. In the extremely rare cases in which this is not possible, the only thing to do is to *imitate Nature* as closely as we may.

VARIETIES OF MILK AVAILABLE.

Before deciding on the details of this substitute feeding it is necessary to consider the various milks which are available, remembering that although they all contain practically the same elements, yet these are present in very different proportions, to suit the baby for whom they are designed.

Milk has been called a perfect food because it contains *protein* to make new tissues, that is, bones and muscle, *fat* to burn to make heat, and *sugar* to provide energy and power, as well as for fuel. The proportions of these in human milk are those required by an infant.

Comparing them roughly, they give the following analysis :—

Table I.—COMPARISON OF VARIOUS MILKS USED IN INFANT FEEDING.

	Human	Ass's	Goat's	Cow's
Protein { casein - 0·6 } 2	0·6 } 2	0·8 } 1	3·2 } 4	3·25 } 4
{ lactalbumin 1·4 }	1·4 }	0·2 }	0·8 }	0·75 }
Fat - - - - 4	4	2	4	4
Milk-sugar - - - 6	6	6	5	4
Salts - - - - a trace	a trace	a trace	a trace	a trace
Water. - - - - 88	88	91	87	88
	100	100	100	100

This may be more easily understood if we look at it in another way. One ounce (or two tablespoonfuls as shown in a medicine glass) of these milks contains roughly :—

Table II.—THE SAME AS TABLE I, EXPRESSED IN OUNCES AND GRAINS.

	Human	Ass's	Goat's	Cow's
Protein - - - -	grs. 10 } 60 grs. of solid in each oz.	grs. 5 } 45 grs. of solid in each oz.	grs. 20 } 65 grs. of solid in each oz.	grs. 20 } 60 grs. of solid in each oz.
Fat - - - -	20 }	10 }	20 }	20 }
Sugar - - - -	30 }	30 }	25 }	20 }
Water - - - -	440 mins.	455 mins.	435 mins.	440 mins.
	1 ounce	1 ounce	1 ounce	1 ounce

Ass's Milk, being much weaker than human milk in protein and fat, is not suitable for a permanent diet, but it has the great advantage of possessing a casein which closely resembles human casein in character. It is therefore easily digested, and is very useful for quite young infants if extra cream be added ; but it is expensive, and must not be continued after a few months, or the child will not thrive. Welford's Surrey Dairies make a speciality of ass's milk, and will send it anywhere.

Goat's Milk.—This milk is very nutritious, being stronger than cow's milk. Goats are said to be proof against tuberculosis, which is an advantage, and they are also much easier to keep clean than cows, and are dainty feeders. Their milk will not travel well, but the 'poor man's cow,' being inexpensive to keep, should be more utilized. Its milk is much used abroad for infant feeding—the child being applied direct to the goat after a preliminary washing of the udder and teat. It may be substituted for cow's milk in the Tables given, the same proportions being observed.

Cow's Milk.—This contains, as shown in *Table II*, the same amount of solid food-stuff as human milk, but differently proportioned. There is too much protein and too little sugar, but the correct amount of fat. This, however, refers to good whole milk, and dilution alters these proportions, e.g., equal parts of cow's milk and water give—

Protein	-	grains	10	} = only 30 grains of solid food in each ounce.
Fat	-	"	10	
Sugar	-	"	10	

The *protein* is now the same as in mother's milk, but the *fat* is reduced to half and the *sugar* to one-third the requisite amount, making a food totally inadequate for a baby's needs. If, however, 20 grains of sugar and 10 drops of fat, e.g., cod-liver oil (or 20 drops of separated cream, which is about half strength pure fat) is added to each ounce of this half-and-half mixture, we have, at first sight, solved all difficulties, because we have now produced an artificial milk up to the standard of mother's milk, viz. :—

Protein	-	grains	10	} = 60 grains of solid food in each ounce.
Fat	-	"	20	
Sugar	-	"	30	

Unfortunately a reference to *Table I*, page 31, shows that the protein of milk consists of two main varieties : i.e., casein or curd, which we can

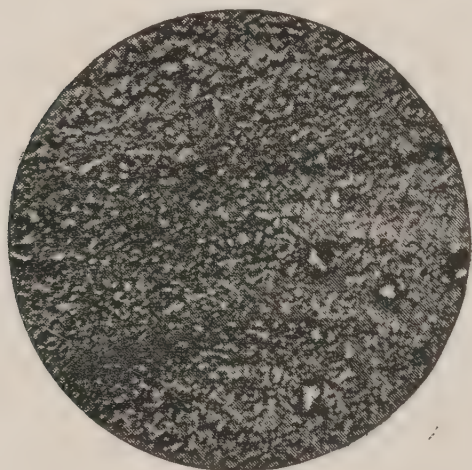


FIG. 6.—Human milk.

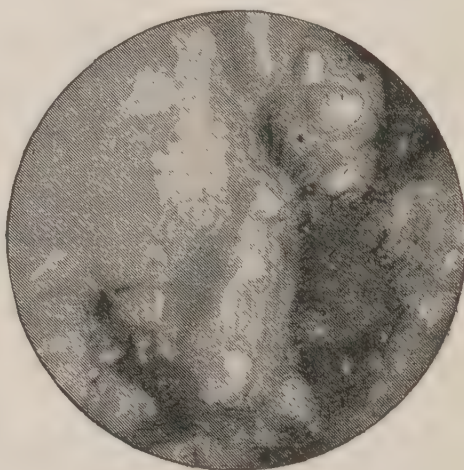


FIG. 7.—Cow's milk.

abstract from the milk by rennet, and a soluble lact- or milk-albumin, which is left behind in the whey, and is often called whey protein.

In *cow's* milk the *casein* largely predominates, and in *human* milk the *lactalbumin*, and this difference is of great importance in the early weeks of life. The behaviour of these two forms of protein in a young baby's stomach constitute one of the difficulties of substitute feeding.

When *mother's* milk reaches the child's stomach it is met by an acid fluid which converts the small amount of casein in the milk into little

solid flakes (see *Fig. 6*). These particles are quite thin, are distinct from each other, and are digested by the gastric juice and absorbed through the walls of the stomach and intestines. Most of the protein, however, being soluble lactalbumin, is absorbed at once.

When *cow's* milk enters the stomach, the protein, being mostly casein, not lactalbumin, instead of clotting in tiny flakes, does so in large hard lumps, which the gastric juice digests with difficulty (see *Fig. 7*). The small quantity of lactalbumin present is, of course, at once absorbed.

The important fact of the different behaviour of *cow's* or *goat's*, and mother's milk, can quite easily be demonstrated in the following manner : Place a sample of *cow's* or *goat's* milk, and another of human milk, in two glasses, and add a little acid, e.g., vinegar, to each. In the human milk very little change will be visible, only some tiny little flakes of casein being thrown down, the rest of the protein (lactalbumin) being in solution ready for instant absorption ; whereas in the *cow's* milk large masses of curd will at once be formed, which are difficult of digestion.

In spite of these differences, however, *cow's* milk, in the vast majority of cases, forms by far the best substitute for mother's milk. Care should be taken that the milk should *not* be from one cow, but from a mixed herd, as the slightest ailment in the one cow would be far more likely to make it disagree than if taken mixed with other milk. It should be delivered in fixed quantity, morning and afternoon, in cans or bottles belonging to the customer, with the name clearly marked upon them. These cans should be sealed before they leave the dairy, and should be thoroughly cleansed with boiling water and soda before being returned to the milkman. The dairy should be one which has adopted the most recent methods for securing clean and rapidly cooled milk, with sterilization of all the vessels used.

Inquiry should also be made as to which milk is the freshest *on delivery*. It is generally that which is brought soon after breakfast, and if so, baby's supply is best taken then.

When cream is ordered, it should be sent in small, air-tight bottles. It will probably be centrifugal cream, and contain 50 per cent of fat. A guarantee as to this should be obtained from the dairy, and also that it contains no preservative.

THE DIFFERENCES BETWEEN MOTHER'S MILK AND COW'S MILK ENTAIL CERTAIN NECESSARY MODIFICATIONS.

I.

Mother's milk is made fresh each time it is wanted, and goes straight into the child's mouth. Given a clean nipple and a clean mouth, no outside germs can enter. *Cow's milk*, on the other hand, during its journey from cow to baby, is passed through pails, and cans, and jugs, handled by people of varying degrees of cleanliness, and may pick up many a disease germ by the way. Further, milk, being a highly nutritive and complex fluid, has not only an extraordinary affinity for germs, but, once

introduced, these germs, which produce putrefaction, fermentation, and many diseases, grow and multiply with astonishing rapidity. There is also clear proof that the specific poisons of diphtheria, scarlet fever, cholera, and tuberculosis are often conveyed through milk, and to sum up, nine-tenths of the enormous infantile mortality in our country is due to the ingestion of micro-organisms.

In very exceptional cases, where the milk-supply can be under strict supervision and be brought within a few minutes from cow to baby, it may be unnecessary to interfere with the milk; but under ordinary conditions the only safe course is to deal with these germs by heat as soon as the milk is received. There are three methods by which this may be done.

Method 1.—This raises the temperature of the milk to about 210° F., and then cools it rapidly. This renders all germs harmless temporarily. Of course there must be no possibility of the entrance of fresh germs.

Method 2 is the same as (1), but is continued for forty-five minutes, and is only necessary if the milk has to be kept longer than twenty-four hours.

This is known as *sterilization*, although, strictly speaking, the milk is not sterile even then, as it requires a higher temperature than that of boiling water to accomplish this.

Method 3 raises the milk to about 180° F., and cools it at once. This is called *pasteurization*; it does not kill disease germs, and is not recommended.

Method 1.—This is the best for general use. It can be carried out in three ways: (a) The best is to buy an apparatus somewhat as *Fig. 8*, containing a cruet to lower and raise the bottles, and keep them from touching the bottom of the saucepan. (b) A cheaper though equally efficient way of carrying out the same

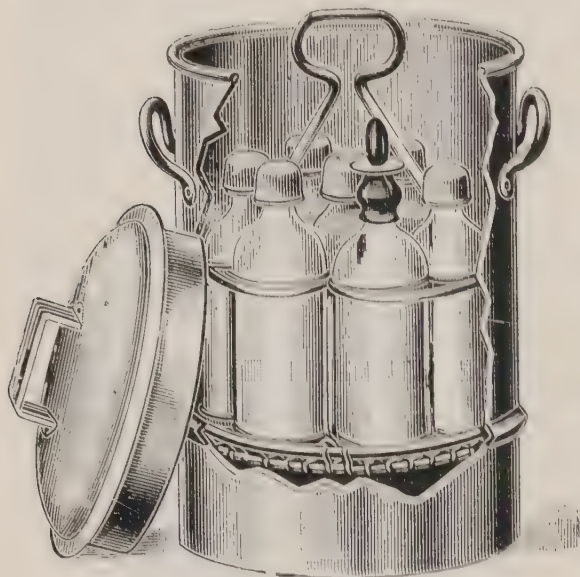


FIG. 8.—The 'Nursery' Milk Boiler and Sterilizer.

principle is to procure a deep saucepan and seven bottles (round medicine bottles answer quite well). Put a thick layer of felt or a wad of tow at the bottom of the saucepan, reserving some to place between the bottles, or get a tinsmith to make a cruet arrangement. Plugs of *non-absorbent* cotton-wool must be placed in the neck of the bottles, taps or discs of rubber being provided in the ready-made article. In either case, as soon as the milk is received, prepare the supply for twenty-four hours. Stir well and divide into the bottles. Put the bottles in position and fill the outer vessel with cold water up to the level of

the milk in the bottles. Boil up and keep boiling hard for four minutes, to ensure that the milk itself rises to the required temperature. Take off the fire or gas ring and cool down as rapidly as possible without breaking the bottles. Generally it is best to add a little cold water to lower the temperature slightly, and then to tilt the saucepan in order to pour out the hot and replace it by cold. This must be done several times, and finally the bottles should stand in quite cold water until needed. When a feed is required, stand one of the bottles in a jug of hot water (150° F.) for about five minutes. At the last moment take out the plug, slip in the thermometer to see that it is not over 98° to 100°, and then put on a teat. The wool or india-rubber cap will have prevented the entry of any germs, so that this method gives the fewest chances of germ contamination after boiling. In very hot weather it may be wiser, unless the bottles can be kept on ice, to reboil any kept longer than twelve hours, or to prepare the food twice. (c) The third way, which is not recommended, as it provides more opportunity for recontamination of the milk, is to mix the day's supply in a jug. Tie over the top a layer of non-absorbent wool, and proceed as before, boiling for ten minutes, as the jug is thicker than the bottles previously mentioned, and being careful that the water is up to the level of the milk. This method necessitates measuring each feed, when due, into an ordinary feeding bottle and then warming it.

Note that boiling the milk itself in a saucepan is not advised, as some portions are heated more than others, and all is raised to a higher temperature than is necessary. The previous remarks as to recontamination also hold good.

Two objections are sometimes raised to this heating process: (a) That it reduces the nourishment in the milk by the skin which arises. This skin hardly appears when *Method 1* is used, and if it does the amount lost may be made up by giving a teaspoonful more milk. (b) That it destroys the living element or vitality of the milk. This is true, but can easily be compensated by giving some fresh fruit-juice daily after two months. The risk of scurvy is thus eliminated, and the *far greater risks* of germ contamination are prevented. Even with *Method 2*, which alters the character of the milk more than *Method 1*, the fruit-juice prevents disaster.

II.

The larger amount of casein, i.e. insoluble protein, found in cow's milk than in mother's milk requires generally to be reduced in quantity by dilution. Sugar and cream are then added, to bring it up to the standard of mother's milk. (See pp. 31, 32.)

This diluent may be (1) *Boiled, filtered water*; or (2) *A weak solution of starch*, e.g., barley-water or oatmeal-water.

1. *Boiled water* is now generally used, as there is no starch in human milk and no digestive arrangement in the infant to deal with it. It is therefore contrary to Nature to introduce it into an infant's dietary.

Nevertheless, babies differ, and sometimes a child, especially after five or six months, appears to digest its milk better if a little barley- or oatmeal-water be added to it.

2. *Thin barley-water* is made by adding one teaspoonful of Robinson's Patent Barley to two pints of water, boiled down to one and a half pints, strained, and kept in a boiled jug as above. It must be made freshly each morning. *Oatmeal-water* : One tablespoonful of medium oatmeal boiled for two hours in a quart of water and strained.

The degree of dilution differs with the child. Some are born with more healthy nervous and digestive systems than others, and their stomachs will easily adapt themselves to dealing with more casein than they would have obtained from their mother. In the same category come those babies who easily get distended with much wind and colic, and whose stomachs prefer small strong meals to large dilute ones. Such children do well on *whole milk feeding* ; the protein is of course in excess, but, contrary to what one would expect, is easily got rid of by the bowels, which, together with the stomach, appear to take on a strong muscular development with a correspondingly vigorous peristaltic action when given the extra protein. The meals are smaller, and the stomach can thus get rid of them more quickly. They can also be fewer, and thus the whole of the digestive organs get more rest and, with the full allowance of fat and protein, are stronger and more able to turn the milk into firm bone and muscle.

Some children, however, are born with a great intolerance of casein, and the milk may require a great deal of dilution, especially if the first ten days' digestive education has been neglected.

III.

The *character* of the casein in cow's milk may require to be chemically altered and softened. This may be done by adding :—

Citrate of Soda, one or two grains to each ounce of milk in the feed.

It is now known that citrate of soda is far superior in reducing the toughness of the curd to any other chemical agent. It also helps to keep up the alkalinity of the blood, and is thus a preventive of scurvy.

At the same time it should not be given regularly after two to three months, but may be added during any time of stress (e.g., teething), or during a temporary indigestion, in the proportion of 1 or 2 grains to each ounce of milk (not mixture), whether whole milk or modified. More than 8 grains at once should never be given.

Bicarbonate of soda, three grains to each ounce of milk in the feed ; *Saccharated lime-water*, six drops to each ounce of milk in the feed ; or *Lime-water*, in the proportion of one-sixth of the feed, are also occasionally ordered.

IV.

Mother's milk contains most of its protein in a *soluble* form (called albumin or whey protein). *Cow's milk* contains most of its protein in a

solid form (called casein or curd). (See page 31, Table I.) This fact explains most of the difficulties of hand feeding during the first few weeks. *Supply the protein in a soluble form*, and the child will readily absorb it, and can be very gradually taught to deal with the solid curd. This fact has been acknowledged in the Modified Milk Table (p. 41), where the soluble whey proteins are only gradually replaced by the insoluble casein. If the whey is made at home from cow's milk, the feeding of the cows is most important, as the effect of deleterious food-stuff is most apparent in the whey. For this reason dried whey is preferable, and much easier to prepare.

The main differences between human and cow's milk having been looked at, practical conclusions based upon them must now be drawn, remembering that every baby is a law unto itself, and therefore that it is impossible to do more than sketch an outline of the *average* normal baby's requirements.

FEEDING FOR THE FIRST TEN DAYS.

FIRST LESSONS IN DIGESTION.

It has been seen (Chapter III) that for the first seven to ten days the child's food is not true milk, but a fluid called 'colostrum,' which takes that time in advancing up to its full strength. If, therefore, an infant needs such gradual education to deal with so bland a nourishment as its own mother's milk, how much more difficult must it be to educate it to deal with anything else. It must be remembered that it is not only the stomach, but the intestines or bowels, which are thus educated. The latter contain at birth a soft, sterile, unirritating material called 'meconium,' which the muscles learn to squeeze onwards, and which so coats or varnishes the delicate lining of the bowel that nothing scrapes or injures it. Should this lining be damaged, germs will at once pass through into the tissues and set up inflammation, colitis, diarrhœa, etc. Of this anti-septic varnish it has been well said, "It is worth a guinea a drop," and the longer it remains the better for the child. If hurried on by unsuitable food, or a pernicious dose of castor oil, this natural protection is lost, and trouble is likely to ensue. Under normal circumstances the 'colostrum' so imperceptibly increases its strength that the intestinal walls and muscles find no difficulty in dealing with it, and after the 'meconium' has disappeared, they learn to exercise their functions rhythmically without pain or difficulty. Generally, about every eight hours the rectal muscles feel the gentle stimulus to their walls of the soft mass, and expel it forthwith.

To *imitate Nature*, therefore, and to provide a substitute for this educative 'colostrum,' is no easy matter; for which reason, unless the mother be very seriously ill, she should be allowed to feed the child for at least a week or ten days, after which substitute feeding can be gradually introduced with a much greater chance of success. Point IV (p. 36) is the main thing to remember at this early stage, and explains why babies so

frequently get their first bitter experiences of indigestion within the first few weeks. Fortunately, healthy babies can soon be taught to digest cow's milk, provided the education be exceedingly gradual. One of two methods can be safely employed : (1) *Use whey* as in the mixture given below ; (2) *Use cow's milk, thoroughly predigested.*

With either of these methods the child will begin by absorbing its nourishment with the minimum of difficulty, and is then gradually taught to work for itself. The good effect, however, must not be frustrated by doses of aperients. For a few days there is hardly anything to come away, though by the third day, after both the morning and evening bath, a little vessel should be placed against the child's buttocks, the cold rim acting as a suggestion to the nerve centres to set the rectal muscles to work ; the outside of the sphincter may also be touched by the finger with the same object ; but no enemas or soap suppositories should be employed. If really necessary—though generally Nature will come to the rescue if she is given time—some petroleum emulsion is the only safe thing to administer, as it is not absorbed but really acts mechanically, i.e., purely as a lubricant.

1. Whey Feeding.—It is wise to have in the house one or two tins of sweet whey powder. This is a standardized preparation known as Secwa, to be obtained through any chemist.* It has simply to be mixed with boiled water in correct proportions to make whey, and it is easier, cheaper, and more reliable than to use rennet and milk, as in curds and whey. It is, however, deficient in fat and sugar, and these must be added. The cream is reckoned as separated or centrifugal cream. If milk is plentiful and the weather cool, the cream may be carefully skimmed off after the milk has stood for four hours, but three times the quantity must be added, with correspondingly less water. It is necessary to use accurate measures, as on page 46.

Whey powder being solid it is best to weigh an ounce on letter scales, and then put it into a little cup or glass which will just hold the quantity and can then be kept for measuring. A drachm weight for sugar can be bought from a chemist, and after weighing it a spoon can be reserved which holds the exact quantity. See also page 46.

WHEY MIXTURES.

Whey Mixture.	For first 5 days.	After 5 days.
Sweet whey powder	1 ounce	2 ounces
Thick cream ..	3 drachms ..	1 ounce
Sugar of milk ..	1 drachm ..	2 drachms
Boiled water up to	10 ounces ($\frac{1}{2}$ pint)	20 ounces

OR

Whey from 2 pints of milk, which will make	16 ounces
Thick cream	1 ounce
Sugar of milk	2 drachms
Water up to	20 ounces

* Casein Ltd., Battersea, London.

Table III.—WHEY MIXTURE FEEDING TABLE.*

1st Day:—Boiled water only, a few drachms.

Age	No. of Meals in 24 hours	Quantity for each Feed	Total amount in 24 hours
2 days	7	3 dr.	2 oz. 5 dr.
3 days	7	5 dr.	4 oz. 3 dr.
4 days	7	7 dr.	6 oz. 1 dr.
5 days	7	9 dr.	7 oz. 7 dr.
6 days	7	12 dr.	10 oz. 4 dr.
7 days	7	13 dr.	11 oz. 3 dr.
8 days	7	14 dr.	12 oz. 2 dr.
9 days	7	2 oz.	14 oz.
10 days	7	2 oz.	14 oz.
11 days	7	2 oz. 2 dr.	15 oz. 6 dr.
12 days	7	2 oz. 2 dr.	15 oz. 6 dr.
13 days	7	2 oz. 4 dr.	17 oz. 4 dr.

* It is supposed in the Table that no breast milk is available.

For times of meals *see page 44*. If awake before time, wait till the correct time, and if necessary give a few teaspoonfuls of boiled water.

If the mother intends to feed, but her supply is insufficient during the first ten days, this mixture should also be prepared, but the meals should be smaller, and should be given *by spoon* immediately the child comes from the breast. As it obtains more from the mother, it will be less hungry and should not be pressed to take more than it wants.†

2. Cow's Milk Feeding—Predigested.—This is accomplished by peptonizing the milk thoroughly, and then giving very small quantities.

At this early stage the infant does not object to the bitter taste which is bound to be developed if the process is carried out long enough to be effectual. After five days the process can be shortened by a few minutes each day, till by three or four weeks the milk can be digested without any peptonization if the curd is softened by sodium citrate as already explained.

Use the method given on page 59—or No. 2 on page 59—but keep the milk warm (110° to 120°) for three hours before boiling up. In hot weather boil and cool down before beginning the process in either case. Halve all quantities up to ten days, as the recipes are for 1 pint.

The choice of predigested or whey feeding has to be settled according to the individual baby. If good cream is available and the child is healthy, whey feeding is quite satisfactory, as it leads on gradually to cow's milk. If, however, the child is tiny or premature, and there is no chance of

† Until milk is added it is only necessary to sterilize the cream by standing the jar in cold water and bringing the latter to the boil, and boiling for five minutes. After the fortnight it is better to proceed as advised on page 34, method 1.

mother's milk, or if cream cannot be obtained, peptonization is preferable, and it can pass in time to whole milk.

Table IV.—PEPTONIZED MILK TABLE.

1st Day.—Boiled water only, a few teaspoonfuls.			
Age	No. of Meals in 24 hours	Quantity for each Feed	Total amount in 24 hours
2 days	7	2 dr.	14 dr.
3 days	7	4 dr.	3 oz. 4 dr.
4 days	7	6 dr.	5 oz. 2 dr.
5 days	7	8 dr.	7 oz.
6 days	7	9 dr.	7 oz. 7 dr.
7 days	7	10 dr.	8 oz. 6 dr.
8 days	7	11 dr.	9 oz. 5 dr.
9 days	7	12 dr.	10 oz. 4 dr.
10 days	7	12 dr.	10 oz. 4 dr.
11 days	7	13 dr.	11 oz. 3 dr.
12 days	7	14 dr.	12 oz. 2 dr.
13 days	7	14 dr.	12 oz. 2 dr.

DIET FROM TEN DAYS ONWARD.

Modified Milk Diet.—A child who has learnt to digest its whey diet should be ready by the fortnight for its first lesson in casein digestion, and if strong and gaining weight well, it may even begin on the twelfth day, though no further increase should be made till three weeks old. Slow and sure is the motto, overfeeding being a more serious mistake than under-feeding during the first few weeks.

Table V is worked out to one pint. This ensures that alterations are sufficiently gradual, and also saves calculations when making the day's supply in the morning. After a month it is well to make an extra quarter of a pint, and after about two months an extra half pint, using the same proportions. It is best to use the one-pint measure, and then make the quarter or half quantity in a half-pint measure, and mix the two quantities before pouring the separate meals into the bottles. After a few weeks, replace a little of the milk sugar by cane sugar or malt extract (which is malt sugar), until no milk sugar is used.

If more meals are given than are provided for, each must be rather smaller, or the daily total will be exceeded. If less meals are given, each should be a little larger to ensure the daily total. It is very important that meals should not be too large the first few weeks and months, as a child easily gets a distended stomach, and an abnormal appetite, with serious troubles later. When cow's milk has been as gradually introduced

as in the above Table, a child very rarely needs any further digestive assistance, but a few tablets of sodium citrate should always be at hand, and if there is any sign of indigestion, 2 grains to each ounce of milk in the feed should be dissolved in a teaspoonful of water and be added to the bottle. This should be reduced to 1 grain to the ounce after a few hours, and be then omitted. Some children, especially if the milk be very rich, require a little water added throughout the nine months, and in this case

Table V.—MODIFIED MILK TABLE.

Age	INGREDIENTS TO MAKE ONE PINT.					No. of Meals	Quantity per Meal		Total in 24 hours	
	Whey Powder	Cow's Milk	Cream	Sugar	Water		oz.	dr.	oz.	dr.
2 weeks	16 dr.	1 0	1 oz.	2 dr.	16 6	7	2	4	17	4
3 "	15 dr.	2 0	1 oz.	2 dr.	15 7	7	2	4	17	4
4 "	14 dr.	3 0	1 oz.	2 dr.	14 2	7	2	6	19	2
5 "	10 dr.	5 5	1 oz.	3 dr.	11 7	7	2	6	19	2
6 "	7 dr.	8 2	1 oz.	4 dr.	9 4	6	3	2	19	4
7 "	4 dr.	10 4	1 oz.	5 dr.	7 4	6	3	2	19	4
8 "	1 dr.	13 0	6 dr.	5 dr.	5 5	6	3	4	21	0
9 "	None	14 0	5 dr.	5 dr.	4 6	6	3	6	22	4
10 "	"	15 0	5 dr.	5 dr.	3 6	6	4	0	24	0
11 "	"	16 0	4 dr.	4 dr.	3 0	6	4	2	25	4
12 "	"	16 0	4 dr.	4 dr.	3 0	6	4	4	27	0
3 m'ths	"	17 0	3 dr.	4 dr.	2 1	6	4	6	28	4
4 "	"	18 0	2 dr.	4 dr.	1 2	6	5	0	30	0
5 "	"	20 0	None	4 dr.	None	6	5	0	30	0
6 "	"	20 0	"	4 dr.	"	6	5-5½	oz.	30	33 oz.
7 "	"	20 0	"	4 dr.	"	6	5½-6	oz.	33-36	oz.*
8 "	"	20 0	"	4 dr.	"	6	6-6½	oz.	36-39	oz.†
9 "	"	20 0	"	4 dr.	"	5	6½-7	oz.	32½-35	oz.‡

* Add one tablespoonful of malted food or barley jelly in one bottle.

† One tablespoonful of malted food or barley jelly in two bottles, and crust to bite.

‡ Hard crust to gnaw before meals, twice daily, and a mid-day meal, when water is given to drink (p. 27).

the diet given for 12 weeks can be continued, only increasing the *quantity* as in the Table. By five or six months it is, however, generally possible and advisable to have attained to whole milk feeding, with a return to a weaker mixture during any little illness or feverishness.

It will be noticed that cream is added throughout the Modified Milk Diet. It has been conclusively proved that children will not thrive on a lower percentage of fat than is found in good cow's milk. Until it is taken undiluted, therefore, fat must be added, and its most easily digested form is cream. If this is difficult to obtain, cod-liver oil can be given instead, beginning with 15 drops after two meals a day, and gradually increased

till by three months old the child has 30 drops three times a day.* If new-laid eggs can be obtained, a yolk well stirred up, and divided amongst the bottles, may be substituted. Virol also is an extremely valuable form of animal fat, and is well digested by most children. The extra fat must be considered as part of the child's food: not as medicine. The lack of animal fat in infants' dietaries is responsible for many cases of constipation, rickets, and malnutrition.

Whole Milk Feeding.—Before 5 or 6 months this requires great care to avoid overfeeding, and the accompanying Table VI indicates the quantities required for a child of average weight. A baby who is under weight by the weight chart must be kept to the amount given for a week or so earlier than its actual age, e.g., a child of 8 lb. at 8 weeks would only require the quantity given for 6 weeks.

Table VI.—WHOLE MILK TABLE.

Age	No. of Meals in 24 hours	Boiled Milk	Sodium Citrate	Total Milk in 24 hours
10 days	7	12 dr.	3 gr.	10 oz. 4 dr.
11 „	7	13 dr.	3½ gr.	11 oz. 3 dr.
12 „	7	14 dr.	3½ gr.	12 oz. 2 dr.
14 „	7	15 dr.	4 gr.	13 oz. 1 dr.
16 „	7	16 dr.	4 gr.	14 oz.
20 „	7	17 dr.	4½ gr.	14 oz. 3 dr.
24 „	7	18 dr.	5 gr.	15 oz. 6 dr.
28 „	7	20 dr.	5½ gr.	17 oz. 4 dr.
5 weeks	7	20 dr.	5½ gr.	17 oz. 4 dr.
6 „	6	3 oz.	6 gr.	18 oz.
7 „	6	3 oz. 2 dr.	5 gr.	19 oz. 4 dr.
8 „	6	3 oz. 3 dr.	4 gr.	20 oz. 2 dr.
9 „	6	3 oz. 6 dr.	3 gr.	22 oz. 4 dr.
10 „	6	4 oz.	2 gr.	24 oz.
11 „	6	4 oz. 2 dr.	None	25 oz. 4 dr.
3 m'ths	6	4 oz. 4 dr.	} 1 salt spoon of Sugar {	27 oz.
4 „	6	4 oz. 6 dr.		28 oz. 4 dr.
5 „	6	5 oz.		30 oz.

After this as per Modified Milk Table V.

A child who has been reared on peptonized milk (p. 59), and is doing well, will be able to dispense with the peptonizing process by 4 or 5 weeks. If citrate of soda has not been previously used, it should be begun in the quantities given above a few days before peptonization ceases and, as will be seen, can soon be gradually reduced.

It will be noticed that no sugar is to be added to a Whole Milk dietary

* Marylebone cream, as used a great deal in Infant Welfare centres, is also useful, as it is cheap and keeps well. It is supplied by John Bell & Croyden Ltd., 50, Wigmore Street, London, W.1.

during the first three months. The larger amount of protein counterbalances the smaller amount of sugar (see *Table II*, p. 31), and if more be given the digestive organs will be overtaxed. The milk supplied should be guaranteed to contain 4 per cent of fat, and be independently examined in case of doubt. Should such milk be difficult to obtain, it should be allowed to stand an hour on coming into the house, and the top milk be used.

The ' Fresh ' Element.—Whichever method of feeding is chosen, it must be remembered that the food lacks the ' fresh ' element, which *must* be provided after a few weeks by the juice of two or three grapes or a teaspoonful of sweetened and diluted orange juice daily. The same amount of raw meat juice should occasionally replace these.

Boiled water, $\frac{1}{2}$ ounce the first fortnight, and increased to 1 and later to 2 ounces, should also be given twice daily, preferably at bath times.

Quantity of Food.—The amounts advised are only approximately correct, but are calculated for a child of average birth weight ($7\frac{1}{2}$ lb.), having plenty of air and exercise and not too much clothing. Any feverishness, diarrhoea, or lack of appetite should lead to a temporary curtailment—a day's feeding on whey only being often extremely beneficial. It will be noticed in the Tables that a rapid increase is necessary till the child is able to take from 16 to 18 ounces a day, after which a very slow increase is required.

Early Weaning.—If this has to take place suddenly, it is necessary to start as if the child were considerably younger than its actual age, and as its digestion proves equal to the demand made upon it, to increase the quality and quantity to the normal for its age, using the Modified Milk Table as a guide. (*Table V*, p. 41.)

Foster Mother Feeding.—This will often save very small, weakly, and perhaps premature babies, who have difficulty in dealing with any artificial food. This is particularly true when indigestion is present as the result of unmodified cow's milk mixtures given from birth.

It is generally possible to obtain a wet nurse from a lying-in hospital or workhouse infirmary, or better still, by inquiry amongst trained district midwives. She and her child must both be examined by a doctor before being engaged ; but it is a great mistake to take a poor woman out of her usual surroundings and feed her up with better fare than she has had in her life, insist on her having a pint or two of stout, and give her nothing to do. Under this line of treatment the quality of the milk will quickly deteriorate, and baby will suffer.

She should have it explained to her that her little charge is very small, and that, at any rate for a time, she would be allowed to bring her own child with her and feed it also. This, especially if interest is shown in her child's welfare, will generally succeed in inspiring intelligent affection for her little foster-child.

The nurse must feed her own child for a few minutes immediately before her charge is put to the breast. The later milk will flow more easily and be of a better quality than the earlier. Once a day the child

should be weighed before and after a meal, to see how much it takes. As it gains strength and weight it will take more, but the regular stimulus applied to the breasts will often result in a plentiful supply, and both children will flourish: this fact is turned to good account in infants' hospitals abroad, where one mother will often successfully suckle three infants. If not, the nurse's child must be fed two or three times daily with a bottle, as described in the last chapter, until it be desired to get rid of the wet nurse, when the foster-child should be educated gradually to the bottle.

Regularity of Feeding is one of the most important details in the successful rearing of hand-fed children. This was dwelt upon when considering breast-fed babies; but if important with them, it is absolutely essential with bottle babies. A long rest should be given to the child's stomach during the night, and three-hour intervals observed during the day. If this plan is begun at birth it will prove an enormous asset to the child's nervous system. It should be awakened through the day until the last meal, and then only be given a few spoonfuls of water (not a bottle) if it should wake in the night. Perseverance in this respect during the first fortnight is amply rewarded. If all goes well, except rather too small a gain in weight, an extra tablespoonful of food in the last night and first morning bottles often corrects it. It has latterly been proved that a child's meal begins to pass through the stomach orifice into the bowel even while the meal is in progress, so that the 'little and often' rule, which left the digestive organs no time for rest, is shown to be not only unnecessary but actually harmful. *The stomach should be empty at meal times.* If not, the acid remnant of the last meal 'turns' the incoming milk, and often sets up sour vomiting and indigestion. To work well, all muscles require a period in which to recuperate their energy, and the more *regularly* they are set to work, the better they can accomplish it. After 5 or 6 months, five good meals are often preferable to six. If the child will sleep the clock round, 3-hourly day intervals can be retained, otherwise the alternative scheme can be substituted. Four-hourly meals are indicated even before this age with children with slow digestions, or with those who are gaining weight too rapidly.

Table VII.—TIME TABLE FOR MEALS.

7 Meals (not longer than 6 to 8 weeks)	6 Meals	5 Meals
5 a.m.	6 a.m.	7 a.m.
8 a.m.	9 a.m.	10 a.m.
11 a.m.	12 noon	1 p.m.
2 p.m.	3 p.m.	4 p.m.
5 p.m.	6 p.m.	7 p.m.
8 p.m.	9 or 10 p.m.	
11 p.m.		

Position During Feeding.—When giving a young child the bottle, the infant must be held in a half-reclining position upon the mother's arm (*Fig. 9*). From ten to fifteen minutes must be taken over each meal, and, if the child suck quickly, the teat should be momentarily withdrawn from the mouth occasionally. It should hardly be necessary to mention that the teat of the bottle should never be placed in the mother's or nurse's mouth, under any pretext whatsoever.

The practice of sitting a baby up and patting it vigorously on the back in the middle of its quiet meal is a bad one. It is well, however, once during the meal and when the bottle is finished, to raise the child for a minute or two and let it expel any wind, sometimes aided by gentle rubbing upwards of the back, and then to place it in its cradle on its right side, but it should always be kept very quiet after a meal. The child should be turned on its left side after a time, and later on, when digestion is good, be placed on right and left alternately.



FIG. 9.—Position during feeding.

APPARATUS NECESSARY.

The apparatus required for Hand Feeding is as follows :—

- A large tray
- A large enamelled basin, if the ready-made apparatus is not used
- Two ordinary feeding-bottles with extra teats, *or*
- Eight small bottles and several teats
- Twenty-ounce measure
- Ten-ounce measure marked in ounces
- Two-ounce measure marked in drachms
- A deep enamelled aluminium or tin saucepan
- Thermometer
- Citrate of sodium tablets
- One yard of muslin.

The ready-made apparatus contains bottles—frame and saucepan—and the whole or part can be obtained from Messrs. W. H. Bailey & Son, London, W.

The Tray is recommended so that everything necessary will be at hand

and can be moved about as required. It should stand on a table close to a widely-opened window on the cool side of the house, away from drains or gullies.

The Basin is to be filled with water, and be large enough to hold the feeding-bottles when not in use.

Feeding-Bottles.—If ordinary ones are used, any good make is suitable, such as *Figs. 10 or 11*. It is not necessary to have an inlet for air, as the

bottle can be removed occasionally from the mouth during the meal. If small ones are chosen, the round Soxhlet make are the best, but ordinary medicine bottles can be utilized.

Either kind must be washed immediately after use, first in cold, then in hot water, and be kept in cold water, and boiled once a day.

The small ones can be filled to the brim with water and be boiled in the saucepan of water before the fresh supply for the day is prepared.

Teats.—These are best made of black rubber, and must adhere very tightly to the neck of the bottles. A bulbous-end teat has lately been put on the market which imitates the nipple and cannot be pulled off.* They must be turned inside out for cleaning—in-

verting them over the end of a pencil facilitates the proceeding—and be boiled every day, and be kept in cold boiled water between times. The hole in the teat should be such that when the bottle is inverted the milk will drop out at the rate of one drop a second. A weakly child may need it rather larger. If valves are used, they must participate in the aseptic ritual.

The Twenty-ounce, i.e., One-pint, Measure.—This is for mixing the day's supply.

Ten-ounce Measure.—This will be needed when the quantities exceed one pint.

Two-ounce Measure.—This must be marked in drachms to ensure the exact quantities being given. The inaccuracy of spoon or cup measuring is responsible for many attacks of indigestion. 1 drachm=1 teaspoonful; 4 drachms=1 tablespoonful or half an ounce; 8 drachms=2 tablespoonfuls or 1 ounce; 20 ounces=1 pint. Earthenware measures holding a drachm, 4 drachms, or 8 drachms can be obtained at small cost.



FIG. 10.—Feeding bottle.



FIG. 11.—Another good type of feeding bottle.

* The Marylebone teat.

Thermometer.—The one mentioned in Baby's Basket Fittings is the best. The food should register 99° . The thermometer can be slipped into the neck of the bottle just before the teat is drawn on. The food should never be given to an infant colder than 98° , and it may be necessary with a very young baby to re-heat the bottle during the meal by standing it in a jug of hot water.

Sodium Citrate can be obtained at Messrs. W. H. Bailey & Son's, or through any chemist, in bottles of 500 or 1000 tablets, each containing 5 grains. It is quite easy to calculate with these the quantity required; or a bottle of 2-grain tablets may also be obtained for use when small quantities are in question—e.g., if giving 3 ounces of milk, when 6 grains of sodium citrate may be required. One 5-grain and half a 2-grain tablet will provide the quantity. It is, of course, cheaper in proportion to buy 5-grain than 2-grain tablets. The necessary quantity can be dissolved in a teaspoonful of water and be added to the bottle just before being given, or can be added to the milk before boiling.

The Muslin is to throw over the tray and all its contents. It must be frequently boiled and should always be used.

This chapter will, it is hoped, give intelligent mothers and nurses a clear insight into the rational feeding of those little ones who are unfortunately deprived of the nourishment intended for them by Nature, and if it is used as a ground plan it can be modified as occasion requires for the individual baby.

CHAPTER V.

HOW BIG OUGHT BABY TO BE ?

Average Weight of a New-born Infant—Overweight—Average increase in Weight and Height—Influence of Food on Weight—How to Weigh Baby—Average Weekly Increase in Weight—Normal Weight Charts—Weight Table—Circumference of Head—Circumference of Chest—Fontanelle—Premature Infants—Incubator for Premature Infants—Weight and Feeding.

THE size of a new-born infant varies very considerably. A weight of $6\frac{1}{2}$ to $8\frac{1}{2}$ lb. may be considered normal, and $7\frac{1}{2}$ lb. is taken as an average. A baby of $5\frac{1}{2}$ lb. would be *below*, one of 9 or 10 lb. *above*, the normal weight. Children have sometimes been born weighing 13 or 14 lb., but this is quite exceptional.

How much will a child increase in weight in a given time ?

The answer to this question will depend to a great extent upon : (1) Whether the child is healthy ; (2) Whether it is able to digest its food ; and (3) Whether it gets the proper kind and proper quantity of food.

				WEIGHT		HEIGHT
				lb.	oz.	Inches
At birth	-	-		7	8	20
„ 14 days	-	-		7	14	21
„ 3 months	-	-		12	8	24
„ 6 „	-	-		15	8	26
„ 9 „	-	-		18	7	28
„ 1 year	-	-		21	10	30
„ 2 years	-	-		28	0	33
„ 3 „	-	-		34	0	36
„ 4 „	-	-		39	0	39
„ 5 „	-	-		43	0	42

Roughly speaking, an average baby doubles its weight by the fifth month, and almost trebles it at the twelfth. In other words, a child gains $7\frac{1}{2}$ lb. by the fifth month and another $7\frac{1}{2}$ lb. by the twelfth to fourteenth month, so that a baby weighing 10 lb. at birth should weigh $17\frac{1}{2}$ lb. by the fifth month and 25 lb. by the end of the year or soon after. Should it weigh 6 lb. at birth it should scale $13\frac{1}{2}$ lb. at the fifth or sixth month and 21 lb. at a year old. It may gain at the rate of $1\frac{1}{2}$ ounces a day for some months together, but this is certainly above the average, and is not to be desired, as an excess of fat hampers all vital processes and predisposes to disease, especially rickets, skin disease, colds, and bronchitis.

A child reared by hand and fed with suitable food, will thrive better and far outstrip in development one fed exclusively on poor breast milk ; but,

on the other hand, it must be constantly borne in mind that, for 'getting on,' nothing can by any possibility equal good breast milk.

Such children will gain weight and height approximately as shown in the table on the previous page.

A child of tall parents will probably be taller than one of short parents, and vice versa. A good instance of the influence of the size of parents upon their offspring is seen in the case of the Nova Scotia giantess, whose baby weighed $23\frac{1}{2}$ lb. and was 30 inches long.

WEIGHING BABY.

Every mother should possess a pair of scales sufficiently large to weigh baby. Infant's weighing machines are now made with a basket to hold the child, which is very convenient.

Fig. 12 shows one form of these appliances. The kitchen variety with large scale pan is, however, just as useful and more accurate, and extra weights can be cheaply bought.

Mothers sometimes have a strong dislike to this proceeding, considering it unlucky and hurtful. Such prejudices are now, however, becoming things of the past.

The best way to perform the operation is to place the scales in front of the fire at bath-time. A small cushion, or pillow, should then be placed in the scale pan to support baby's head, and a warmed flannel be pinned round the naked child, who is then gently placed in the scales.

It is well to put on sufficient weights beforehand to approximately reach the sum expected, if the household variety be used, thus shortening a proceeding that baby is at all times apt to resent. Properly managed, the whole thing can be done under a minute. Of course, the pillow and flannel must be weighed afterwards, and their sum deducted from the gross weight.

The most satisfactory plan is to weigh baby regularly every day, or every other day after the fourth day, to the end of the month, and then once a week, and to keep a chart for reference. The same hour of the day should be adhered to.

It is astonishing how a few days' diarrhoea or sickness will affect the weight. If for a fortnight it shows no increase, some change in diet may be necessary.

During the first week of its existence a baby rarely increases in weight, but often actually diminishes. This is most marked the first two or three days, after which it may gain a little, so that at the end of the week it may weigh the same as at birth.

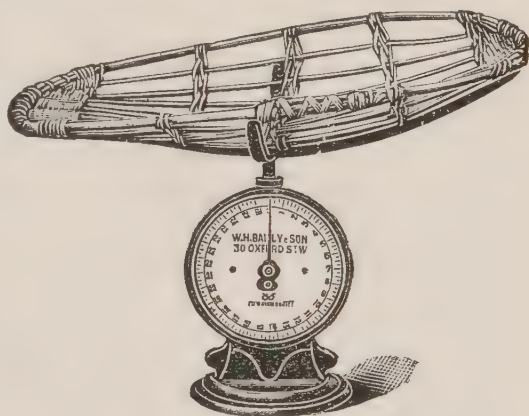


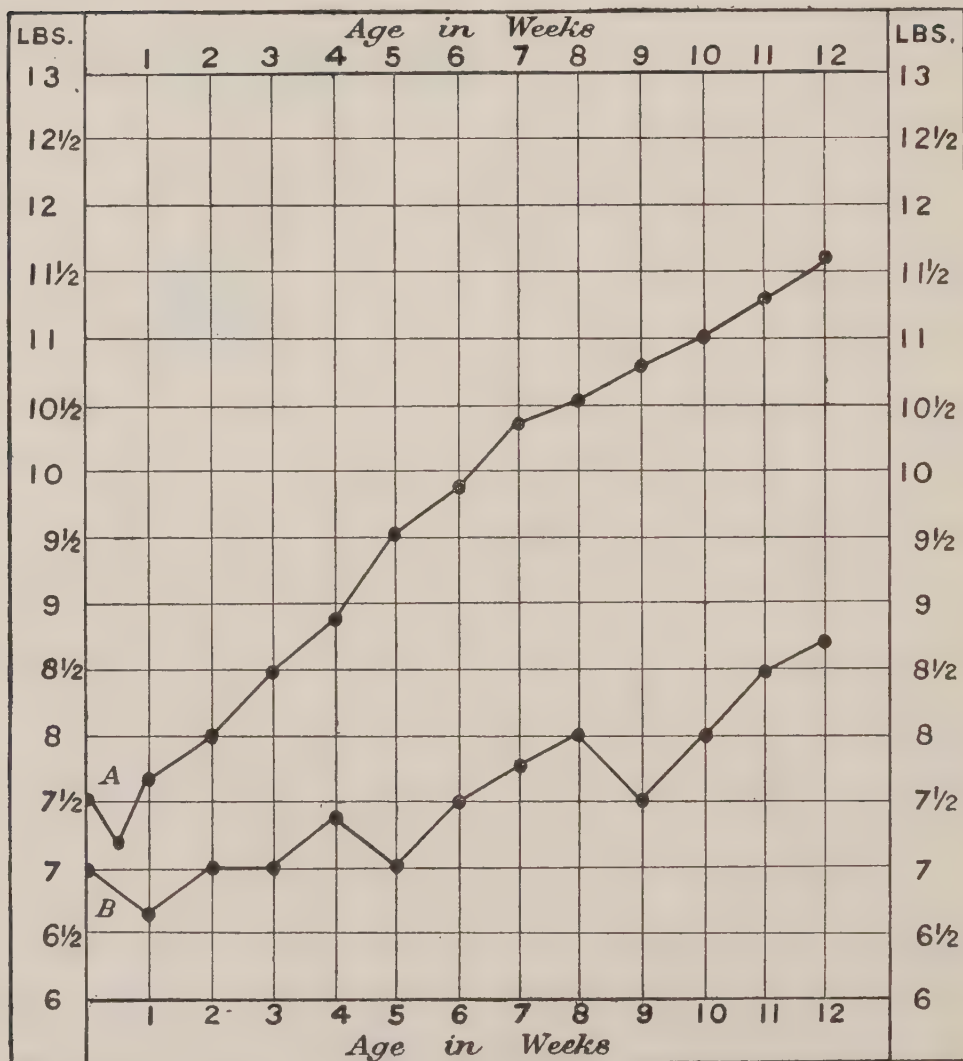
FIG. 12.—Infant's weighing machine.

OUR BABY

WEIGHT TABLE.

TIME						AVERAGE INCREASE PER WEEK	
During the 1st and 2nd months	-	-	-	-	-	6	to 7 oz.
" " 3rd and 4th "	-	-	-	-	-	4	to 5 "
" " 5th and 6th "	-	-	-	-	-	3½	to 4½ "
" " 7th and 8th "	-	-	-	-	-	3	to 3½ "
" " 9th to 12th "	-	-	-	-	-	3	to 3½ "
" " 2nd year -	-	-	-	-	-	2	to 2½ "

WEIGHT CURVE
OF FIRST TWELVE WEEKS.

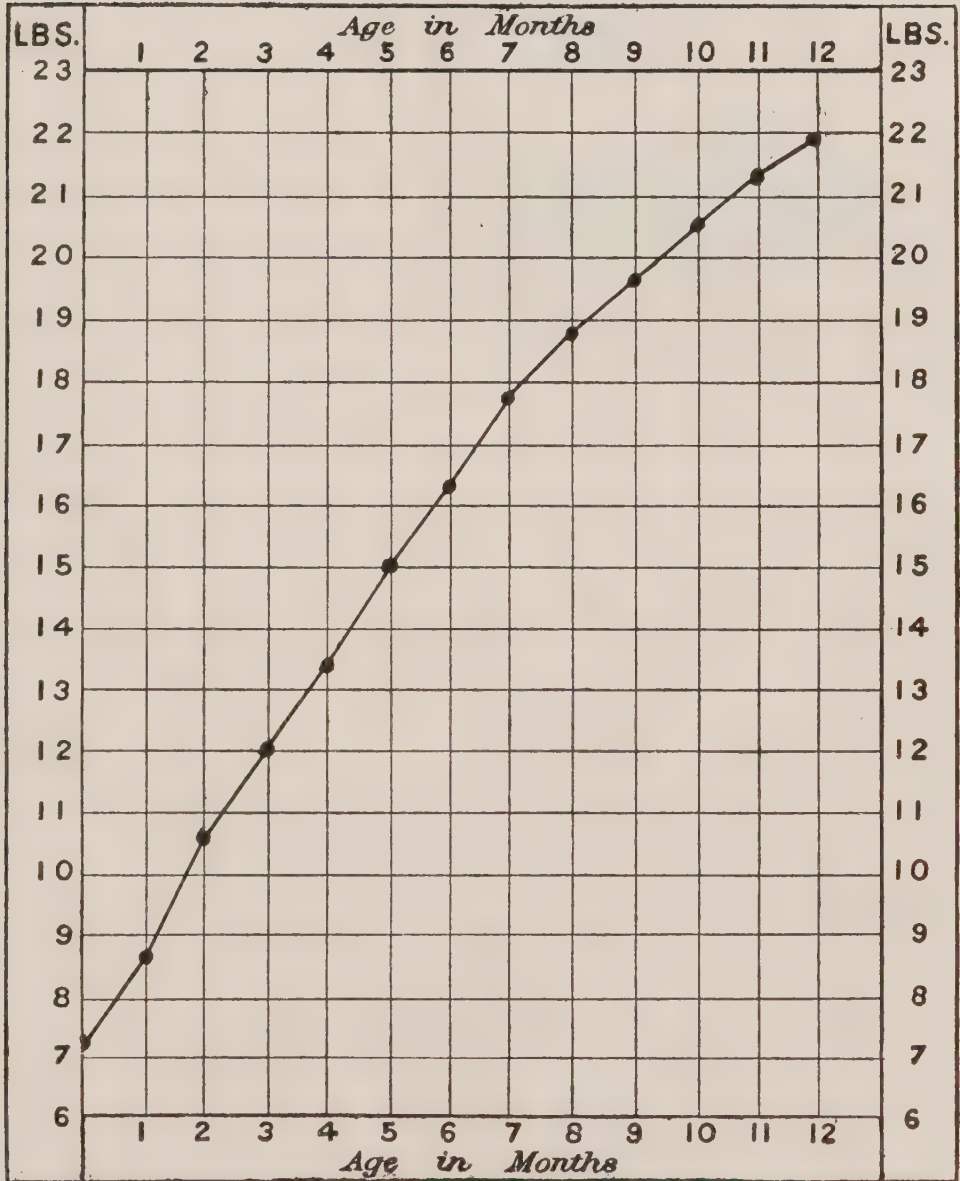


A.—Child properly fed.

B.—Child improperly fed.

The accompanying Charts indicate the normal rate of increase for a child of average weight during the first three months as reckoned by weeks, and during the first year as reckoned by months. They give a good healthy average, and a gain much below or much above should cause a careful investigation of the child's diet and habits of life.

WEIGHT CURVE
OF FIRST TWELVE MONTHS.



Some children put on weight very quickly, and are proportionately tall. If such a child can *do* more in every way than an average child, in walking, climbing, talking, being forward with its teeth, etc., no anxiety need

be felt, but if the weight is the sole difference, great care will be needed to ensure proper development of muscles, bones, etc. Such children often present marked 'mottling' of the skin.

HEAD AND CHEST.

In new-born infants, the greatest circumference of the head is more than that of the chest taken just below the nipples. At a year and a half or two years the two measurements should be about equal, after which the chest increases in size much more rapidly than the head.

	HEAD	CHEST		HEAD	CHEST
3 days old - -	13½	13	1 year - -	19	19½
3 months - -	15½	15	2 years - -	20	21
6 " - -	17	16½	3 " - -	20½	23

The above are only approximate, but it should be noted that in ill-developed children the chest measurement may not exceed that of the head at six or seven years old.

Undue enlargement of the head occurs in rickets and in water on the brain.

The fontanelle, or space between the bones in the front of the head, is large at birth, rather more than 1 in. in diameter. It remains this size for nine months, when it slowly fills in, and should be closed by eighteen months.

PREMATURE BABIES.

If a baby be born prematurely, i.e., before the ninth month, it will almost certainly be under weight, and, if much before its time, will be very small and difficult to rear. It will not be ready to undertake all the functions of a full-term child, and it speaks volumes for the care and watchfulness of a mother or nurse who has successfully reared a baby born at seven months. For two or even three years such children may be backward, but should eventually become quite normal in every way. Such a child will probably weigh about 3½ or 4 lb., and an eighth-month baby about 4 or 5 lb. An infant weighing under 3 lb. will not, probably, be long for this world. Besides being so small, it will probably have no hair, and the nails will be imperfectly formed. If yellow and wrinkled, it will be diseased in addition.

Incubators or mechanical nurses are always employed in hospitals, consisting of a sort of glass box, in which the child lives, the temperature being kept up by hot-water pipes or bottles. The results with incubators are very good—the Maternité in Paris giving the following :

BABY'S WEIGHT					DIED	LIVED	TOTAL
2 lb.	3 oz.	to	3 lb.	5 oz.	28	12	40
3 "	5 "	"	4 "	6 "	35	96	131
4 "	6 "	"	5 "	7 "	11	101	112

A very tiny baby requires special attention from the moment of its birth. If it is known to be premature, an incubator (*Fig. 13*) should be hired

from one of the surgical instrument makers, and be all in readiness before the child is born, and should be kept at a temperature of 77° F. This will prevent any loss of heat at the beginning, which it is very difficult to make up, and is one of the chief causes of death.

The child should be placed in the incubator until all is ready for its bath, which should be given inside a screen by a fire, at a temperature of 102° . The child should be immersed up to the neck, washed while in the water, and be then wrapped up in a warmed flannel, drying being done without any exposure to the air. It is generally advised to then oil it all over with warm olive oil.

A previously prepared coat of cotton wadding, with holes for the arms, should next be applied, and strips of wadding be wound gently round the arms, feet, and legs, with a small wad of wool for a napkin. Over this coat should be placed more wool, and finally a soft woollen shawl (Shetland if possible).

If the child weigh over 5 lb., the incubator need not be retained after a day or two, and its temperature should be gradually lowered to 65° . In this case the child should be placed in its cradle between warmed blankets, which, with the exception of a small opening for breathing, must entirely envelop it. The cot should be made as described on page 69. Hot bottles should be placed on each side and at the feet of the infant, taking care that two or three folds of blanket protect it from being burnt. The air of the room must be kept warm and pure.

The heat of the child must be maintained night and day by filling the bottles with hot water as soon as they become chilled. It is best to fill one bottle every hour, and thus prevent all becoming cold at once. No nursing should be allowed, the necessary changing being done in the cot. In about a week the wadding must be changed, and, if strong enough, another hot bath may be given. If too weak to suck, the milk must be drawn off by a breast-pump into a warmed glass, the first portion being thrown away and the later milk being given, and feeding managed by a spoon or pipette (*Fig. 14*). If no breast milk is available—although every effort should be made to stimulate the breast, even by the application of a hungry ex-baby—the

No. 1 whey mixture in the Modified Milk Table given every three hours,

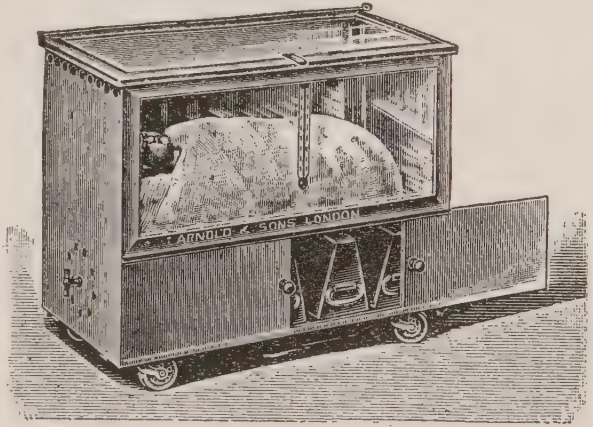


FIG. 13.—Incubator.

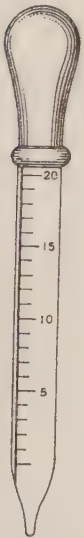


FIG. 14.
Graduated
Pipette.

with spoonfuls of water between times, will be suitable for a child of 4 lb. A pipette may have to be used at first. The child will require more than if of ordinary weight, and at ten days should weigh $4\frac{1}{2}$ lb., and be taking one-fifth of its body weight in whey mixture each twenty-four hours = $14\frac{1}{2}$ oz. The No. 1 whey mixture must be continued for longer than with an ordinary child, and the change to No. 2 be very gradually made. Until it weighs $6\frac{1}{2}$ lb. it will require one-fifth of its body weight in food daily; afterwards less—generally one-seventh. Instead of whey mixture, fully peptonized milk may be used.

In France, and now more frequently in England, such infants are often fed by 'gavage,' i.e., by passing a soft rubber tube down the throat, connected with a funnel into which the food is gently poured. The tube must be extracted quickly or the fluid will return. Occasionally brandy is necessary. At the end of about six weeks, if the child has got on well, it may be treated as an ordinary baby, but will require special care for months, or even years.

Premature children will, of course, be backward in teething, walking, etc.

CHAPTER VI.

WHY DOES NOT BABY GET ON ?

Signs of Baby Getting on—Want of Cleanliness—Want of Air—Want of Proper Food—Irregular Feeding—Improper Feeding—Starch Foods—Malted Foods—Condensed and Dried Milk—Insufficient Food—Weak Digestion—Humanized Milk—Whey—Peptonized Milk—Raw Meat Juice—Albumen-water—General Principles.

THE preceding chapters describe how a healthy baby should be brought up, but there are so many poor babies in the world that do not 'get on,' that it may be well to go a little more into detail. How does a mother know if her baby is getting on ?

Of course, the question can at once be answered in the negative if baby is getting thin and weakly, is repeatedly having attacks of vomiting, diarrhœa, and colic, is perpetually crying and rarely sleeping ; but though none of these may be present, we cannot safely say baby is 'getting on' unless most of the following signs are noticeable :—

1. A steady weekly increase in weight, according to the weight curve.
2. A firm condition of the flesh, and uniform colour of the cheeks, with warm hands and feet.
3. A good appetite at meal times.
4. Long, quiet sleeps.
5. General contentment, and vigorous exercise, which it takes by kicking and stretching.
6. The teeth appearing at the right times.
7. The mental and muscular development, proceeding as at p. 79.

The point is, *Why* does not baby 'get on' ? In nine cases out of ten the mischief has something to do with the diet. It may, however, be that the child is starving for want of fresh air ; there may be no widely open windows in its sleeping and living rooms, and it may be too much indoors. This point has been fully dealt with elsewhere, but is again mentioned because of its importance.

Supposing, then, that baby has plenty of fresh pure air, sun baths as well as water baths every day, and is warmly but lightly clad, and yet does not 'get on,' we must go back to the all-important question of diet.

There are at least four distinct reasons connected with diet why a baby may not 'get on,' and in only one of these can the fault be laid at the poor child's own door.

1. A want of cleanliness.
2. Irregular feeding.
3. Improper, including insufficient or excessive, feeding.
4. An unusually weak digestion.

1. Cleanliness.—The necessity for this has already been fully treated of. But it is so very easy for a busy nurse or mother to drift into careless ways, quite forgetting that some remains of milk left in a teat or dirty jug may cause fermentation and set up vomiting and diarrhœa. In summer weather this is especially true, and a superficial washing of jugs and cans is often the reason why the milk turns so soon. Food prepared, and kept warm in the perambulator for two or more hours, is a frequent cause of disaster.

2. Irregular Feeding is sure to be followed by evil consequences. The digestive organs must have a regular rhythm of work and rest, and this is provided for by allowing three hours between the feeds, with one long interval at night. A frequent cause of vomiting is that a feed is poured into the child's stomach before the previous one has passed out, thus setting up immediate disturbances.

This regular feeding should be done *by the clock*, and nothing should be allowed to interfere with this rule. It is a good plan at first to write out the hours of feeding on a paper and pin it up on the wall, to serve as a reminder ; but a baby fed punctually very soon serves as a clock itself. The temperature of the food must not vary ; food too hot or too cold will upset digestion.

3. Improper Feeding.—This is one of the commonest reasons why a baby does not 'get on.' Now, what are improper foods ? A very proper food for the mother may be by no means so for the infant. A little thought would soon show this. Nature provides the food on which a child ought to live for the first nine months of its life, and if this be of good quality and quantity the child thrives. It therefore follows, as before pointed out, that a child's diet must resemble its mother's milk as closely as possible, and it may be well to consider from this standpoint some of the foods often given.

Starch Foods would include pap, i.e., bread scalded in water and a little milk added, arrowroot, cornflour, bread, and many of the patent foods. Can any reasonable woman imagine that such things resemble mother's milk?

The main ingredient in the above-mentioned foods is starch, a substance that infants have no power of digesting. For starch to be digested at all, even by adults, it is necessary that it should be first converted into sugar, and this is effected by the salivary glands in the mouth, and others lower down. In young infants these glands are not properly developed ; and therefore, while starch is a suitable food for adults, who have the power of digesting it, it is most unsuitable for infants, who have no such power, and its presence in a child's bowels only causes irritation and pain, fermentation and diarrhœa, while it affords no nourishment whatever. Public opinion is becoming educated up to this point, that starch in any form is an improper food for infants ; but the best authorities go further, and declare that no artificial foods at all should be given to infants below six months old, except in special cases.

After six months, it may be advantageous with some children to add to

their milk a small quantity of food in which the starch of different grains has, to a great extent, been converted into grape sugar, as it will be remembered that free starch is only admissible in very small amount before the age of two years.

Such foods are known as *Malted Foods*, and generally form the first addition to the purely milk diet. Mellin's Food contains no free starch, being really a desiccated malt extract, and in the same way as Maltine or Kepler's malt extract, often aids in the digestion of the curd of cow's milk. Savory & Moore's and Benger's Foods, Neave's Cereal Food, and Allen & Hanburys' Malted Food contain only a little free starch, and are therefore some of the best to use when the digestion of starch is to begin.

Foods which consist mainly of unaltered starch, and are suitable for children over eighteen months or two years of age, are Frame Food, Robinson's Groats, and Chapman's Entire Wheat Food, etc. These are rich in protein, and very valuable in their place.

Fresh and good cow's or goat's milk cannot, however, always be obtained, e.g., in very poor districts, on board ship, and in some foreign countries. During very hot weather, or outbreaks of diarrhœa, it is also wise to have a substitute at hand, and this may well be :—

(a) *Dried or Desiccated Milk*, in which all the water from good cow's milk is evaporated away, the resultant powder being easily stored. Excellent examples of this are Glaxo and Trumilk, in which the percentage of fat is high. As the expense is almost the same as cow's milk, with less risk of germ contamination, many municipal authorities employ them largely with great success.

Some dried milk is treated with malt, good examples being the Allenburys' Milks No. 1 and No. 2, which only require to be mixed with boiled water in definite proportions to produce an easily digested fluid closely resembling mother's milk.

The Allenburys' No. 1 Milk and Neave's Milk Food are useful for *very* young infants, as the percentage of whey proteins and casein are brought into line with mother's milk, though cream is then required to be added. When taken at full strength cream is unnecessary. Allenburys' No. 2 Milk can follow on later.

These dried milks must necessarily be exposed to a very high temperature to render them sterile, and it is even more important than with heated cow's milk to safeguard the infants fed on them by giving fresh fruit or raw meat juice after a month.

(b) *Condensed Milk*. Here some of the water has been evaporated, a paste resulting. It is a favourite substitute for the fresh article, but is much less to be recommended than dried milk, as the large amount of sugar upsets a child's digestion, and, if much diluted, the essential parts—protein and fat—fall far below the necessary standard. If used as a temporary diet, i.e., as a stepping-stone in cases of very weak digestion, be quite sure the brand is one containing plenty of fat. Unsweetened condensed milk can now be obtained, which is better for the child, but being less concentrated is more expensive.

A good desiccated milk is all that can be desired for a temporary substitute, and if a voyage has to be undertaken with a young baby, the change should be begun a few days before embarkation, in order that the child may grow accustomed to it under ordinary surroundings. No mother, however, who can obtain fresh cow's or goat's milk should rest content with any substitute as a permanent diet.

Under- or Over-Feeding.—Some children may have no indigestion, but their weight curve is below the normal, while they take their bottles ravenously. Here the vital parts of the food require increase, and if the child is taking a fair quantity, the mere exchange, effected very gradually, of milk for water, till it is taking at least 2 oz. of pure milk a day for every pound of its weight, will probably do all that is necessary. A child of six months, weighing 16 lb., will therefore require 32 to 36 oz. of whole milk—not milk mixture—a day. This method of discovering whether a child is taking sufficient nourishment does not hold good after the above weight is reached.

In breast-fed cases, this failure to gain weight may arise from over-feeding, although the child appear ravenous. The sensations of the mother are not a safe guide, and it must be noticed whether the child passes large motions (though perhaps not each day) and much water, and whether it perspires easily. Should these points be present, the number of meals should be reduced, the interval between them be lengthened, while it may also be best to shorten the time at the breast. A 'test-feed' (p. 24) will be useful. Should the opposite condition prevail, supplementary feeding may be necessary (p. 24).

4. An Unusually Weak Digestion.—Some babies are born with very little capacity for digestion, and these, though fortunately not at all common, give a great deal of trouble to both mother and nurse. Many mothers imagine their children suffer from weak digestion, when all the time the fault lies not at the child's but at the mother's door: she has been treating it wrongly. It is rare for a breast-fed infant to have any great amount of indigestion; it generally occurs in hand-fed infants, for reasons that can be easily understood from the preceding chapter.

Supposing, however, that food has been regularly given in proper quantities, and of a proper quality, and that all other reasons for a baby not thriving can be excluded, and still the child is continually suffering from diarrhoea and vomiting, it must be concluded that the ordinary diet suitable for children with normal digestion does not agree, and that the child really has a weak digestion. Some change must be made, or it will go from bad to worse. A good wet nurse would, of course, be the best thing to try, and would give the weakling its best chance (see p. 43). Other alternatives will be:—

Dried Milk.—The mode of preparation makes the casein in these milks very easy of digestion, and, especially in hot weather, it may often be given with advantage.

Humanized Milk.—In towns this is prepared at the large dairies and delivered daily, as milk is not fresh enough by the time it arrives at the

consumer's house to attempt its composition at home. In the country, if cows are kept, it can be prepared by an intelligent dairymaid, as follows : Allow one pint of milk to stand six hours, take off the cream and put it into a jug, and add half the skimmed milk to the cream. Boil, and set aside. Separate the curd from the remainder of the milk by means of Benger's artificial rennet, and after heating the whey to 150° add it to the mixture in the jug. Give to the child without further dilution. Should this agree, less casein must be gradually abstracted. A convenient method is to use Hawksley's Humanizer.

Mothers who have understood the preceding chapter will at once see that, though half the casein has been removed and extra fat added, so that the mixture is very nourishing, yet the remaining casein is untreated, and with some babies it will be necessary to add citrate of soda or even partially to peptonize it.

Whey is milk from which all the casein has been abstracted. When the curdling has been effected, the curd should be broken up to release some of the fat which has become entangled in it, before straining through muslin, and finally filtering through white blotting-paper. The whey powder known as Secwa makes a whey of standard strength in a few moments. It is a most valuable food in many circumstances, especially for diluting cow's milk for young infants. If there is a great intolerance of casein, it is recommended to give it as Whey Mixture (see p. 38), and to gradually increase it.

Peptonized Milk.—In fully peptonized milk all the casein and some of the fat is digested before it is taken, and the milk is thus ready for immediate absorption by the stomach ; it can be effected in several ways :—

1. It can be bought ready prepared from the large dairies, which send it out in bottles.

2. It can be easily prepared at home by using Fairchild's *Zymine Peptonizing Powders*, which are put up in little tubes containing sufficient to peptonize one pint of milk. Put a pint of fresh milk, 1 ounce of cream, and 5 oz. of boiled water in a clean jug or bottle. The water may be boiling or the milk may be slightly warm, but the temperature of the mixture must be 100° . Shake into the jug the contents of one of the tubes. Put the jug into a deep saucepan or basin of hot water, temperature 110° , and allow it to remain in a warm place for half an hour, at the end of which time boil it up thoroughly. The boiling stops the peptonizing or digesting process. Should the child be very ill, or very young, the process of peptonizing must be kept up for much longer : at least an hour. In this case the milk will be rather bitter, but young infants do not notice this. Older children can have sugar added. No other dilution is necessary ; and the quantity given should be that in the Whole Milk Table.

Another method which is much recommended is as follows :—

Bring a pint of whole milk to a temperature of 120° (in hot weather boil it up and cool down to 120°). Add 40 grains of sodium citrate dissolved in a tablespoonful of water. Add 4 drachms (measured) of Benger's Liquor Pancreaticus. Keep at a temperature of 110° to 120° for three

hours. Boil up and cool down rapidly. Beat up and strain before use. This is useful for an infant, artificially fed from birth. (Page 38.)

3. It can be prepared by using a preparation made by Savory & Moore, which is a condensed milk fully peptonized. This is a very convenient preparation, but it must not be used too strong, and the measuring must be done with a measure glass, not by means of a spoon.

Any one of these three methods may be followed, and if carried out carefully, will, in ninety-nine cases out of a hundred, agree with the child, the milk when entering the stomach having only to be absorbed, there being no curds of casein to digest, and therefore nothing to disagree.

On the other hand, it must be remembered that though it is quite the right thing to feed children upon predigested food long enough to tide over a difficulty and educate the stomach, it is equally wrong to continue it for any length of time. Any organ that has no work to do wastes or atrophies. It has been clearly shown that a healthy kitten, fed entirely on predigested food, fell a good deal behind another kitten fed on ordinary milk, both in weight and stature. Children kept too long on predigested food do not gain weight and strength as they should, and their digestive organs become weaker instead of stronger, so that it is very difficult to make any change in the diet without a violent attack of indigestion.

Peptonized food should never be left off suddenly. If methods (1) or (3) have been used, one teaspoonful of the peptonized milk should be replaced by one of boiled cow's milk in each bottle for two days, when two teaspoonfuls can be tried, increasing by one teaspoonful every two or three days, until the whole is replaced by boiled cow's milk. If method (2) has been used, the peptonizing process must be diminished by several minutes every day until it can be dispensed with altogether.

Raw Meat Juice.—Take two ounces of best rump steak, obtained daily from a reliable butcher, mince finely, add a pinch of salt, and place in a recently scalded tea-cup. Cover with a tablespoonful of cold boiled water, and stand for an hour. Then squeeze tightly through muslin until the meat is left white and dry. It must be made fresh every day, and in very hot weather Bovinine or Wyeth's Meat Juice is safer. The quantity to be given depends on the quantity of protein in the diet—but a dessert-spoonful once or twice daily, added to the bottle, or given alone with a little sugar, is a usual dose.

If taken for long the stools become green and offensive, and it should then be stopped for a time.

Albumen-water.—Dissolve the white of a new-laid egg in half a pint of boiled water, adding a pinch of salt. Stir it in, but do not beat it up. This is simply a temporary food, as it contains no fat or sugar, but the albumen is easily digested, and it is therefore very useful in intestinal disturbance. A little milk sugar should be added to it. Whey, containing soluble protein, has much the same value. Four drachms of Secwa, shaken up in four ounces of water, is easily made, and does not require added sugar.

GENERAL PRINCIPLES.

A note of warning must be added on the subject of continually changing a young infant's food. Some mothers, who have not mastered the essential principles of successful hand-feeding, instead of seeking medical advice on such an important subject, experiment on their unfortunate baby according to the advice of the latest visitor, and are surprised that the child's stomach resents such treatment.

It must not be forgotten that an acute attack of indigestion, as shown by vomiting and diarrhœa, may occur with a baby, as with an adult, from some transient cause, e.g., an error in cleanliness or in the temperature of the last meal ; and the conclusion that the whole dietary is at fault is not to be lightly arrived at.

The acute attack should be treated by the *omission* of the next meal when due, to give the stomach a rest. When the second meal is due, or earlier if the child appears really hungry, it should consist of albumen-water or whey, as also should the next meal. This will often act like magic, by washing out the alimentary canal, and the child will be able by the time the third meal is due to take it as usual, though it is wise to make the feeds rather weaker and smaller than before for the next few hours. If not regularly taking citrate of soda in the bottle, it would be well to do so for a time. Should this prove insufficient, it will then be necessary to try one or other of the preparations mentioned above.

All cases of very weak digestion cause a great deal of trouble at first, and though a few hints have been given, it must be remembered that infants cannot be treated by a hard and fast rule, and what may suit one might kill another. Owing to this fact, doctors now sometimes prescribe the exact amount of fat, protein, etc., which they wish the child to have, and the milk is prepared accordingly at the dairy.

The rationale of the line of treatment which will probably be adopted by the doctor will, however, be now understood ; and it is an axiom that needs no proving, that unless a child have a proper amount of food, containing the proper elements, in their proper proportions, and presented to it in a form proper for its own digestion, it cannot ' get on.'

CHAPTER VII.

BABY'S EXERCISE AND SLEEP.

Importance of Exercise—Crawling—Walking—Carrying a Baby—Perambulators
—Going Out for a Walk—Massage—Gymnastics—Breathing Exercises—Sleep
—Mid-day Nap—Hours of Sleep—Quantity of Sleep.

EXERCISE and sleep are two very important parts of a baby's life. For the first fortnight very little exercise is taken, except by an occasional stretch. After this time it begins to be necessary for the child's health ; and that it is enjoyed is easily demonstrated by watching a tiny baby after its bath kicking out its legs and arms on the nurse's knee before the fire.

A mother is sometimes concerned by the bowed condition of her child's legs. This is originally caused by its position before birth, and every *voluntary* effort of kicking, especially against a little pressure, such as the hand, should be encouraged, as this exercise will straighten them quicker than any amount of rubbing. A tiny baby, if put on its back on a bed, will delight to kick and stretch its limbs. After four or five months a child likes to kick and jump up and down on the mother's knee, which helps the process, and by the time it wants to stand alone the legs should be quite straight. Children encouraged to use their muscles in every way possible will rarely need to be prevented from walking, however early they may attempt it. At the same time no exercise must be carried to the point of fatigue : a few minutes' exercise, with a long rest after it, should be the rule.

It must be remembered that in nature, a simple act may have far-reaching consequences. If the muscles take plenty of exercise in pure air, they are not only developed themselves, but develop the bones to which they are attached. The bones then, besides becoming strong and healthy themselves, will also contain healthy bone marrow, and from this bone marrow is manufactured the most important part of healthy blood—the red blood cells,—which affect the nutrition of the whole body.

Crawling.—Children from seven or eight months may be put upon the floor on a clean blanket with a few toys, and will remain happy for a long time. Knitted overalls should be worn, and will protect a child from cold. The draughts from beneath the door should be provided against before a child is put on the floor. Crawling seldom begins before the tenth month, and it is rendered a safe enjoyment by a Babies' Playground (*Fig. 15*). These are also made on legs, with a floor to avoid the ground draughts, but they require a net over them as soon as the child is tall enough to lean over.

A child should not be allowed to crawl at will over rooms and landings. All sorts of germs are probably lying in wait, and the child's little hands, to which they attach themselves, are frequently stuffed into its mouth, at great risk.

Walking.—Attempts at walking are generally made before a year old by children who have been encouraged to use their muscles well, and who are not very fat. Strong muscles make strong bones. Should a child's legs seem inclined to bend, no walking should be allowed until a later date ; or should bending occur after beginning to walk, the child must be resolutely kept off its feet for a time and every effort made to improve the muscle tone.

On wet days the child should have the landing and a couple of rooms, with open windows, to run in and out of ; if properly clothed it will keep quite warm and enjoy the freedom.

Probably it will shout and sing at the top of its voice, giving splendid exercise to the lungs. There is something wrong with a child who is always quiet ; and at suitable times a good noisy romp is to be encouraged.

A child very easily tires ; it trots about so much when playing that its strength should be carefully husbanded during set walks. About a quarter of an hour before bringing the child in, it may be allowed to get out of the mail cart and walk or run about, but half a mile is as much as any child of two and a half years should be allowed to walk at a time. It is a great mistake to discard the perambulator too soon. It should be used until the child is at least four years of age, and later if out for some time. Over-walking is said to play an important part in bringing on infantile paralysis.

Carrying a Baby.—It should be remembered that at birth the spine is quite straight, but will bend in any direction if pressure be applied. The back, therefore, must always be well supported, and even when older a child should not be allowed to sit up too much, or the spinal column, being too weak to support the weight of the head and arms, will bend in the wrong direction. This is one of many reasons why it is better for a baby when awake to lie and kick in its cot than to be nursed.

Perambulators.—How should a young baby be taken out ? This is rather a vexed question, as some people have a great prejudice against perambulators. The three-wheeled perambulators both of the old and very modern style are certainly open to criticism, at least for babies under a year old, but the bassinette pattern, with careful using, is a great boon to both baby and nurse. As a matter of fact, baby is less likely to catch

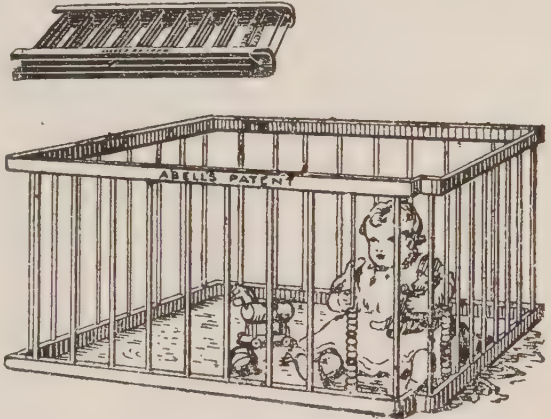


FIG. 15.—Playground in use, and folded.

cold in a perambulator than if carried on nurse's arm. In the winter, a hot bottle should be provided, and soft, warm wraps. The pillows should be soft, and baby be put flat on its back for part of the time. In this way the child can be made as warm and cosy as in its cradle, with the addition of breathing purer air. On dusty days a thin piece of muslin should be thrown over the top when passing through dusty streets, especially when a child lies flat. It should not touch the child's face.

The outside temperature should be from 50° to 60° for a very young infant to be taken out ; if born during the winter, it may be necessary to keep it in for some weeks.

After this time the child may be 'hardened off slowly,' as the gardeners say, until it can go out regularly every day. A thick, foggy atmosphere should, however, always be avoided. On any other day, if sheltered from the wind on a balcony, or on gravel—not grass—it can sleep in its perambulator for hours together with great advantage. The shade of a tree or hedge should be utilized if the sun is strong. Children with tender skins should have a little cold cream rubbed on their cheeks before going out in windy or frosty weather, to prevent roughness, as a clear soft skin is one of childhood's great attractions.

The child should be taken out for a walk proper, and not shopping or visiting. Open spaces, not streets, should be chosen, and if these are difficult to find, the garden is to be preferred if the perambulator is pushed about for part of the time to give some exercise.

The leather hoods of ordinary perambulators are very pernicious : if kept up, the air inside is soon absolutely foul, and the child is better off in a well-ventilated room ; in summer the air is 10° to 20° hotter from the sun beating on the leather. If the hood is reversible, it may be useful to act as a wind screen if put halfway up, but a child requires the motion of air on its face to promote vigour and health. In summer an umbrella or canopy hood, white outside and green inside, is needful for strong sun, but a tree or hedge forms a better shade. If the hood cannot be taken off, the child should be laid with its feet touching the end so that its head is not inside, or it should be kept quite down.

When a child begins to sit up alone, a safety strap should be used to prevent an accident on waking, or if left for any reason unattended. The Perfect Safety Harness Co. have a very good pattern. It should also be used at night, unless a safety net is placed over the cot (see p. 70).

Mail-carts are great acquisitions to older children ; they can take their turn in pushing and being pushed, and thus make their walk a source of enjoyment. To be silently pushed along in a perambulator for a couple of hours is dreary work to an intelligent child of two or two and a half. In winter a warm camel's-hair or fleecy bag reaching to the waist should be used, into which the child is popped after running about, as many colds are contracted by the lack of sufficient protection for the legs in the wicker mail-carts and push-carts, and also from the perspiration induced by running in thick clothing. If a short, sharp run is taken, holding nurse's hand, the outer coat can be removed, and be put on again as soon as it is

over, and the child put back in the mail-cart. Older children who run with hoops should also be more lightly clad than for a solemn walk or ride.

Whilst quite young, watching the trees wave about and the carts go to and fro was sufficient amusement, but now is the time when an intelligent, bright nurse is an immense help. Children are always asking questions, and many a lesson may be unconsciously learnt as to size, colour, animals, etc., by drawing the child's attention to various objects while out for a walk, e.g., "Here is a big brown horse coming," or "Look at that little white dog."

A large open space is a great gain to children, and should always be sought in their walks, as here the air is purer, not being contaminated by the smoke of the chimneys or the refuse of the streets. At the same time it should not be a gossip-field for the nurses, or an opportunity for their charges to mix with other children who may come from fever-dens or vermin-filled houses.

Massage.—There is one form of exercise which little children should have frequently administered, and that is kneading and firm rubbing of the limbs upwards by the hand. This rubbing develops the muscles wonderfully, and the best time to do it is after the bath. It is specially useful in rickets. But it must never be forgotten that voluntary exercise is worth much more than the passive form.

Massage should also be carried out in cases of constipation, and is then applied over the abdomen for ten minutes night and morning after the bath. The hand should be oiled, and with firm pressure start from below, up the right side, across the front and down on the left side, the movement being almost a circular one, and always in the same direction (*Fig. 16*). It must be slowly and continuously carried out.



FIG. 16.—Massage of the Abdomen.

Gymnastics hardly come into consideration when treating of babies, but a trapeze, fastened by ropes from a cross-beam, is a most useful form of exercise. The Swedish exercises are of great benefit to growing children, especially girls, as their muscular development is generally but little considered, and their amusements do not naturally partake of such an athletic character as those of boys. *Tiptoe exercises* as soon as a child can walk, followed a little later by skipping, should be encouraged if there is any tendency to flat-foot. *Breathing exercises*, either out of doors, or standing before an open window, should be carried out every morning, and several times during the day. The child must be taught to keep the

nasal passages clean, to stand with shoulders back and mouth shut, and take in a deep breath through the nose, keep it while 1, 2, 3 is counted slowly, and then let it out—repeating this three or four times. At the sea, or on the top of a hill, it should be suggested to children what good air this is, and how they should take in deep breaths of it. A good chest expansion is one of the best weapons that a child can possess in its fight against tuberculosis.

SLEEP.

How much a baby should sleep is a question difficult to answer in definite terms. Generally a sleepless baby is one that has been brought up badly, and not taught from the beginning of life to sleep all night. The children of very neurotic parents may evince a great restlessness, and such need especially careful training, and medical advice. When speaking of good and bad habits, it has been shown how important is the early training of an infant with regard to the question of sleep, and one can only look with pity on the nurse or mother whose bad methods of early training are bringing forth fruit in the shape of weary paeings to and fro, rocking and hushing the baby—and sometimes the 'old baby' too—to sleep. Little wonder is it that the mid-day nap is soon given up with these children; it entails far too much labour and time.

A well-brought-up infant will, for the first fortnight, generally sleep the whole time unoccupied by feeding and dressing, i.e., twenty-one out of the twenty-four hours. At about three weeks or a month old, if encouraged to stay awake about an hour before bedtime, it will sleep better at night.

By two months old it will often be awake several times during the day for an hour at a time, but if well trained, will be quite content to lie quietly in its cradle.

These periods of wakefulness will gradually increase until by six months a healthy child should settle off at 7 p.m., and sleep the clock round. During the morning and afternoon it should have two good sleeps of one and a half hours each, but after 4 p.m. should be kept awake to make it sleepy by bed-time. At twelve months, a baby should have a two hours' sleep in the day, from 11 to 1, or from 12 to 2. It is a good plan, at night, to insert in the napkin a pad, as mentioned in *Chap. I.*, or place the child on a bran pillow as used in France. In the latter case the urine forms a ball with some of the bran, and no moisture of the parts occurs.

At two years, the mid-day sleep may be shortened to one and a half hours, if the child should awake at that time; but even when it does not go to sleep, the mid-day rest should be insisted upon till five years of age, although if it is found that a child never sleeps, it should not be left without a quiet occupation, e.g., a favourite doll or Teddy-bear. When putting the child to rest, it is best to remove its dress and shoes, darken the room, and tuck a light coverlet over it.

As a general rule, little children should have twelve hours' sleep at night. It is a mistake to put a child to bed too early, unless it be

convenient for it to wake at an equally early hour in the morning. Few children will sleep more than twelve hours at a stretch.

All through childhood a great deal of sleep is required, and it must be remembered that some children need more than others. During sleep a child recuperates all the vast expenditure of energy which has taken place in the day ; and to curtail the former means that the latter will weaken instead of invigorate the frame of the little toddler. Children when first sent to school should have an extra allowance of sleep to compensate for the mental energy called for. From eight to twelve years eleven hours', from twelve to fifteen years ten hours', and from fifteen years onwards nine hours' rest should be secured if good brain-work is to be expected.

CHAPTER VIII.

WHERE SHALL I PUT BABY ?

The Mother's Room and its Fittings—Suffocation—The Cradle and Bassinette—
Bed Clothes—Nursery—Night Nursery—Pure Air—Ventilation—Cubic Space
—Temperature—Cleanliness—Drainage—Infection—Isolation—Disinfection.

IT may be helpful to point out that the room chosen for the mother's use should receive consideration. Very often the spare room is more convenient, though a sunny room should have the preference, at least in winter.

It should have two single beds, and as little unnecessary furniture as possible. The drawers should contain only what will be required for mother and child, and the washstand should have nothing on it but jugs, basins, soap, new nail-brush, drinking water and glass, and a bottle of disinfectant. The floor is best covered with linoleum or cork carpet. The windows should open widely, and a screen be provided. About three weeks beforehand the room should have a thorough spring-clean, any papering or whitewashing required having been done previously. The mattress, unless new, should be cleaned. If there is a carpet, it should be taken up and beaten, and the floor scrubbed beneath. After this the drawers should be stocked with all requisites, new blankets being thoroughly aired, and in winter a fire lighted every day or two.

The beds, and cot or cradle, should be so arranged that the child's head is not near the head of any other sleeper. In fact, it is better on the far side of the room, or between the window and nurse's bed, as the air it breathes must be as pure as possible. Many colds are caught by lack of this precaution. In hospitals the cot often hangs at the foot of the mother's bed. Direct draught from a window near the cot can be provided against by a low screen.

Some years ago it was always thought that, for at least the first month of its life, a baby should sleep in its mother's bed. This is a very bad habit, for the child breathes hot, impure air, and it very often leads to too frequent feeding. Sometimes, too, the terrible accident of suffocation occurs, from the mother pressing the infant too closely to her during sleep, or partially turning over upon it. Sixteen hundred deaths from this cause alone occurred in England and Wales in 1902. This danger has been properly recognized in some countries, where it is illegal for a young infant to sleep with an adult.

THE CRADLE OR COT.

From the very first day of its life a baby should have its own little bed, bassinette, or cradle. Unless standing high of itself, it should be placed upon two chairs to keep it from draughts.

If expense be a consideration, it is advised that a cheap wicker cradle be procured, as it can easily be carried about, and forms an easy method of acclimatizing the child to cooler air after the first few days. In summer it obviates the necessity for a perambulator in early days, if the garden is secluded or a verandah is available.

By three or four months a crib can be obtained for upstairs use, as the open-air baby spends most of its time in the perambulator. The crib should be of brass or enamelled iron, made with high sides, which are the same height all the way round, and which, if possible, let down (*Fig. 17*).

It should have a woven wire mattress, with a thin hair mattress above it, and be made up in the same way as the cradle. The piece of india-rubber sheeting over the mattress is unnecessary after a child is quite clean at night, except in illness, when accidents may happen. For the sake of appearance a sheet may be put over a blanket, and be turned back over the quilt, which should still be very light. No heavy clothing should ever be found on a child's bed.



FIG. 17.—Crib.

The cradle, if lined at all, should have one layer of very thin porous material, such as muslin, or it obstructs the air; curtains are inadvisable for the same reason. In making up the bed, it is a good plan to have one large, but light and fluffy, blanket to place at the bottom. It should overflow both sides and the foot end. On it is placed the mattress. In winter a shakedown of chaff laid on this is cosy and sanitary, and between the two an india-rubber hot-water bottle can be placed for the first few days. A small piece of jaconet or mackintosh can be laid across the centre, and an under blanket over this. Then a soft, low pillow, with calico cover, and a pair of soft blankets.

The child should, at first, be *wrapped* in a soft shawl (Shetland for preference, as its loose meshes retain the warm air). Later, the shawl should be placed over it and one blanket omitted. Tuck up as usual. Finally, bring over the sides of the outside blanket and turn the end up over the feet, and secure with safety pins. This forms a kind of sleeping sack, and as acclimatization proceeds, will serve to keep the child warm when out in the garden, on a verandah, or in its bedroom with air freely flowing through, even in the coldest weather.

When a cot is used, it is a good plan to stretch netting over the top to prevent a child standing up and overbalancing. Many broken limbs have been the result of neglecting this important precaution. Nets are sold for the purpose, e.g., the 'Beatrice Safety Cot Net' (Fig. 18), or can be quickly made by a netter at home with bright-coloured macramé thread. A 'Perfect Safety Harness Strap' (p. 64) can be used if preferred. The bedding and bed-clothes should be placed before an open window every day for an hour to purify them thoroughly. On wet days this should be done before a brisk fire.

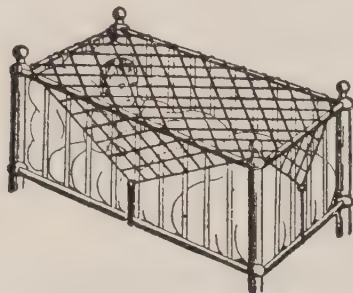


FIG. 18.—Beatrice Safety Cot Net.

A word of warning is necessary here. Any blankets or night-wear which have been soiled by the urine should never be used again without washing. The faintest urinary odour about a child's bed is a sign that cleanliness is not being thoroughly carried out; and a child sleeping in such an atmosphere is being slowly poisoned. Turkish towelling can be bought quite cheaply by the yard, and is useful for placing under the child. Little Viyella sheets can also be made or bought, and are easily washed. Napkins should be placed at once while wet in a large vessel of cold water—rain water if possible—and will then need much less washing.

THE NURSERY.

The room that a child is to occupy after the first week or two must be carefully considered, and it is best to set apart a room for it—the Nursery.

This is the most important room in the house, and should be chosen with care. It should be high up, though not exactly under the roof, face the south or west, and be lofty, for it should abound in air and sunlight, without which it is impossible to rear healthy children.

Wherever feasible there should be a night as well as a day nursery, which much simplifies matters of ventilation; but if this is impossible, three or four times every day the child must be taken into another room, and the doors and windows of the nursery be thrown wide open for a time to change the air in every corner. It has been well pointed out that a child's day nursery should really be the garden, while a large-sized revolving shelter for wet days would prove a most profitable insurance policy against doctors' bills.

Pure Air contains a large amount of oxygen, which we inhale every time we breathe, exhaling at the same time carbonic acid gas. Oxygen is essential to life, whilst carbonic acid gas is poisonous. It will thus readily be seen that in a room filled in the morning with pure air, and inhabited all day by persons taking in the oxygen, and replacing it by carbonic acid gas, unless the room be well ventilated the air will become more and more impure, until at last it is positively dangerous to life. Many babies have lost their frail little lives from lack of this knowledge

on the part of their parents. Therefore, if a child is to inhabit the same room as its parents at night, it follows that very great care will have to be taken to keep the air in that room fit for the little one to breathe.

Ventilation.—In order to secure proper ventilation without draught, it is necessary to allow a space of about a thousand cubic feet for each person, grown-up or baby. The cubic space of a nursery can easily be found by multiplying its height, length, and breadth together, though, of course, any furniture, especially if bulky, will take up room and make the available space less. Supposing the height of the nursery be 10 feet, its breadth 15 feet, and its length 20 feet, that would give $10 \times 15 \times 20 = 3000$ cubic feet, which would be sufficient for a nurse and two children.

Although a nursery be quite large enough, there must, at the same time, be proper ventilation. What is proper ventilation? It is an adequate change of air without draughts, and for this it is necessary to have a way for the impure air to go out, and a way for the fresh air to come in. The open chimney, especially when there is a fire, answers for the first, and the open window for the second.

The window may be kept constantly open without causing a draught, by having a piece of wood, six inches high, nailed to the lower sill in front of the sash: the lower sash is then opened three inches or so. But this is quite inadequate, as also is a space of two or three inches at the top of the window with the blind pulled over it! The smaller the space the bigger the draught. Often a few inches will produce a direct draught which vanishes if the window be opened to its fullest extent. Two square feet of open window are required for each person in a room if sufficient oxygen is to be supplied. There should be no difficulty about this at night, when all but the face is warmly covered. Cold air is stimulating and vitalizing, and is sufficiently warmed by passing through the nose. It is found in hospitals that the most delicate infants can be educated up to sleeping in wards with the air flowing freely through—even in winter—and the vitality they amass is amazing. In the daytime, especially when a young child is being carried about or attended to, windows may need to be temporarily closed, or a screen put round the chair; but once the child is covered again in the cot the windows should be re-opened. Children who can run about should be warmly clothed, and will then benefit greatly by the pure air, especially on bright days, when the windows should be opened top and bottom as widely as possible. If the room contain two windows, one can be drawn down to its utmost limit and the other thrown up in like manner.

The windows, which should be low so that the children can see out, must be protected inside by railings to prevent accidents; and a good fire, well protected by a guard, is far better than a stove.

Temperature.—A thermometer (*Fig. 19*) should be kept in the nursery, and the temperature maintained between 55° and 60° as a general rule, unless the child is asleep, when it may be much lower.

The nursery floor should, if possible, be covered with cork carpet or linoleum, and a large square of carpet be placed in front of the fire place.

There should be very little furniture, and, if there be no night nursery, another room should be used for the nurse's dressing room, where she can keep her own clothes, baby's washing apparatus, all soiled linen, etc.

The floor should be washed every week, and dusted with a damp cloth every morning.

If the walls can be painted, it is the best thing to do, but if not, sanitary wall paper, which can be washed, should be used. Bright-coloured pictures should be on the walls, and a swing fastened to a cross-beam is a great amusement.

No Food. especially milk, should be kept in the nursery. Slops of all kinds, and soiled garments, must be removed immediately; they contaminate the air, which, it cannot be insisted upon too often, must be kept as pure as possible, especially in stormy weather, when the children are obliged to remain indoors.

Every intelligent mother will now be able to frame rules for the proper ventilation of the children's living and sleeping rooms, and will, of course, see that the more people there are in a given space, the oftener will the air require to be changed, because the quicker will it become polluted.



FIG. 19 —Room Thermometer.

Gas Burners use up a great deal of oxygen, and should never be kept lighted when the children are asleep. A night light is quite sufficient. Small safety reflector lamps, which leave the room dark except where the light is needed, are very useful.

The Drainage of the house is of great importance, and no pipes should be allowed to enter direct into the main sewer. Untrapped or improperly trapped pipes are a very fertile source of illness, often causing diarrhoea, sore throat, diphtheria, low fever, etc.

ISOLATION AND DISINFECTION.

When a child is suspected of having any infectious disease, it should be at once isolated, even before the doctor arrives, for some fevers, e.g., measles, are very contagious at quite an early stage. Quite true, in some cases the child may only be suffering from a bad cold or simple feverish attack; but no harm has been done, and it is always best to err on the safe side.

If whooping-cough or measles breaks out in a house where there is a weakly baby, it is by far the best plan to send the infant away altogether.

Isolation is always difficult to carry out thoroughly, but half and half measures are quite useless.

The best room to choose is one at the top of the house, and, if possible, the whole of the top floor should be given up to the patient and nurse. All superfluous furniture should be removed, including the carpet, window curtains, bed hangings, etc., and a sheet hung up over the doorway kept wet continually with Izal or Toxol disinfectant.

Of course the nurse is just as liable to carry contagion as the patient, and should not mix with the family at all.

Minor cooking, e.g., warming up beef-tea, milk, etc., should be done upstairs by the nurse, as also the washing up of cups, plates, etc.

Disinfection.—All soiled linen should be placed in a disinfectant solution for an hour before going to the wash.

The doctor will say when the period of infection is over, and will probably order disinfecting baths. The child and nurse should then have fresh clothes, and the rooms be disinfected. This disinfection is best carried out by the District Sanitary Inspector, application being made to the Medical Officer of Public Health. The usual plan is to shut up the room and burn sulphur or use formalin. After twenty-four hours the door and windows are opened, and the floor scrubbed with carbolic soap.

In cases of scarlet fever the ceiling will require to be whitewashed, and the walls stripped and papered.

CHAPTER IX.

BABY'S NURSE.

A Good Nurse—Qualities of a Good Nurse—Cleanliness—Tidiness—Method—Training of Infants—The Force of Habit—Obedience—Sleeping—Breathing—Cleanliness—Warmth—Evils of Baby Comforters—Contentment—Toys—Normal Progress—Lessons—School—Child's Record—Moral Training—Voluntary Obedience—Punishment—Truthfulness—Self-control—Loving-kindness—Nervous System—Usefulness—Tidiness—Nursing of Sick Children—The Sick Nurse—The Sick Room.

THE NURSE.

BABY must have a nurse—that is certain, and a nurse, too, for quite a long time. Baby is not like a puppy, which in a few days will begin to act independently and in a few weeks can dispense with any special looking after.

He develops very slowly, and needs constant supervision, even in the most elementary matters, for the first three or four years of his life.

It has often been said that the best nurse a child can have is its mother, but this is not always the case.

A good nurse must possess certain qualities, be she the mother of the child or not.

If a mother can afford it, and especially if she be young and inexperienced herself, it is better not to choose too young a nurse for her first child ; and she should give the preference to one who has had the care of quite young infants previously, or who has been trained in one of the excellent Schools for Nursery Nurses now so deservedly popular.

A really competent nurse is an unspeakable treasure to a young mother ; but if her views on ventilation, artificial feeding, etc., be erroneous, her ideas must not be blindly followed. A nurse should never be ashamed to confess ignorance, which is far better than to hazard a confident opinion upon a subject of which perhaps she knows nothing. It would be wise if every mother and nurse took a 'First Aid' course, to be prepared for emergencies. This may not be possible, but every mother should endeavour to learn as much as she can of the best methods of child care before her first baby comes. In London there are often courses of lectures open to her at very small cost, and in towns where a Mother's and Baby's Welcome is available, there is generally opportunity for acquiring useful knowledge.

A Good Nurse should possess a strong love for children, simply because they are children, and should prefer being a nurse to anything else. A person who has this characteristic is rarely lacking in the second all-

essential quality—that of patience. To lose one's temper with a naughty child is a fatal mistake.

The nurse must also be perfectly trustworthy, obedient, and truthful, or how can she teach these qualities to her charges? Many a child has had his first lesson in deceit from his nurse saying, "I will give you so and so, if you won't tell," or from seeing things done, when the mother is absent, which would not be thought of were she at home.

A nurse should be perfectly healthy, and have good, or at least well-stopped teeth, and it is important that she should keep them clean. Foul breath in a nurse may be the cause of a puzzling dyspepsia in her little charge. She must not be consumptive or scrofulous, or she may be the innocent cause of a child's ill-health, or even death.

It may be useful here to mention that nurses are often seen, ostensibly in charge of children, who are reading, chatting to acquaintances, looking into shop windows, or even doing a little shopping on their own account. Some even go so far as to take their little charges on visits to their friends. Now a person who will do any of these things, except by special permission, is quite unfit to be entrusted with children; she cares more for herself and her own pleasure than for the little ones under her care. Many a case of bronchitis or fever has arisen through carelessness in one of these respects, and it is wise for every mother to make strict rules on this subject which, if wilfully broken, should lead to dismissal. Young children should never be taken shopping, if it can possibly be avoided; but a nurse should always feel that by asking permission it will be arranged that she shall go out, quite free from the responsibility of the children.

A good nurse should be a second mother to the children, so that, when away, their real mother may leave them in her care with perfect confidence that the welfare of the little ones is in safe keeping. Such a nurse should have her authority always upheld, and if she be perhaps wrong in some little question of nursery discipline, this should be pointed out to her afterwards, and not before the children. Mother and nurse should always act as one, and a nurse should always inform the mother at once should she notice the slightest thing unusual in the children under her care.

Cleanliness, tidiness, and method are also very important qualities in a nurse.

Cleanliness—in her person, and in every corner for which she is responsible, be it a child's ear or a nursery cupboard.

Tidiness—or otherwise the nursery will soon degenerate into a scene of indescribable confusion. Drawers and shelves should each be in perfect order—a place for everything, and everything in its place.

Method—because, though a muddler may get on fairly well with one baby, when there are several she has 'never done,' and is always trying to make up time, though, of course, never succeeding in doing so. There is often more comfort in a nursery with four children and one methodical nurse, than with one child and no method.

TRAINING BABY.

The "capacity for *obeying*, on which depends a man's capacity for *ruling*" in later years, must be developed from the earliest days, long before voluntary obedience is possible. Fortunately, nature is on the side of obedience. She abhors haphazard methods in the 'things that matter,' and rewards the possessors of good habits with a *joie de vivre* unknown to the spoilt darlings of weak-minded mothers.

A definite stimulus produces a definite response, i.e., automatic obedience. Apply the same stimulus for a certain time, and the response will be ingrained into a habit—good or bad according to the means used, but, whichever it is, exceedingly hard to break. To the mother and nurse belong the honour of initiating many of these automatic good habits which have the most far-reaching effects on the health of the individual through life.

Sleeping.—Good habits of sleeping and feeding should be developed together in a new-born infant. Nature sends a child into the world prepared to sleep indefinitely, and it is comparatively easy to guide this instinct into regular habits. These should aim at—awaking at definite intervals through the day to take food, and sleeping steadily through the night without food: a little patience and perseverance is needed at first, as indicated in earlier chapters, or the child will think that to wake means to eat, and if awakened by a noise will imagine it is feeding time. This is the case at night, and it is important that a quiet dark room be used then—to impress upon the nerve centres that waking in the night is a mistake! When once the rhythm of this method has been established, two great steps have been taken. The gain to the digestive system has been explained (p. 19), and the gain to the nervous system cannot be over-estimated. Inquiries made of adults who sleep badly, often reveal that they were restless, disturbed sleepers in childhood, and this could often have been prevented by early training.

After each meal the child should be laid in its cot for at least an hour; the stimulus of the cool pillow to the head helps to produce the 'sleep after food' habit which is so valuable in babyhood, generally resulting in a short nap till seven or eight months old. Later the habit can be utilized for the mid day sleep of the active child, which is such a recuperative agent to the nervous system that it should be encouraged as long as possible. A child made to lie in its cradle or perambulator, except when being fed, or occasionally nursed, will very rarely give any trouble when bed-time comes. When sleepy, it will go to sleep, and when wakeful, it will lie and kick about and coo to its heart's content, taking far more exercise, and being just as happy, as though being nursed. The child will thus form a habit of loving its cradle, instead of hating it as so many do. Never accustom a child to being rocked to sleep, and never wait by its bedside while it is settling off.

Sometimes, of course, a baby is chilly, either from careless bathing or exposure, and then it would be cruel to put it down in a cold cradle—wrap

it up in a blanket, and thoroughly warm it by the fire, and then it will go off happily enough. Never forget the grand rule of putting a child into its cradle directly after each meal.

Breathing.—It is of the greatest importance to educate an infant to breathe habitually through its nose, and not through its mouth. The air, in passing through the nasal cavities, is warmed and moistened before reaching the lungs—a simple preventive of colds. As soon as it can understand, it should be taught to keep the nose well cleared, and to this end should be made to blow its nose thoroughly every morning and night.

Whenever a child's mouth is seen to be open, unless indeed it be crying or feeding, it should be gently closed, and especially is this necessary when laying an infant down in its cradle for a sleep. If this be neglected the throat becomes dry and rough, and the tonsils may eventually become enlarged, and snoring will probably result.

In some cases a child is unable to breathe through its nose, and always has its mouth open: there is then an obstruction to the free passage of air, due either to enlarged tonsils or to polypoid growths, known as adenoids, at the back of the nose. (See Chap. X, 'Adenoids.')

Cleanliness.—After good habits in feeding, sleeping, and breathing, comes cleanliness. Here, again, everything depends upon regular perseverance. The stimulus of the rim of a cold soap-dish or other vessel should be applied to the buttocks *at the same time* daily, e.g., after the morning and evening bath; and if it can be applied once or twice at the moment it is noticed that an action is about to take place, the lesson will be more quickly learnt. This, if regularly applied, induces an evacuation at definite times, a habit which is the greatest known preventive of constipation throughout life.

Before each feed the child should also, for the first two months, be held *over* a utensil on the knee, and the napkin be changed at the same time, although, if known to be soiled, it should always be removed at once. After this age, it is generally found better, especially with hand-fed children, to 'change' after a meal; and as the habit of going awake into its cradle will be firmly established by this time, the little intervening incident will make no difference, so long as it is quickly performed and the child laid down directly afterwards.

Most children can be taught to dislike a wet napkin, and by seven or eight months old can often discard it in the house, only wearing knitted drawers. Napkins must never be dried and used again without washing, and on no account must soda be put in the water in which they are washed.

Warmth.—The preceding chapters have intimated the importance of gradual education in the good habit of keeping warm. It must not be carried on by fits and starts, but systematically applied as to the temperature the child breathes, the water it is bathed in, and the amount of external heat required, each decrease being so slight that it is unnoticed by the child. This education should not begin for the first week, as it takes as long as that to learn to accommodate itself even to our summer heat after having been accustomed to 100°. A child whose hands and

feet do not keep warm in a temperature of 55° to 60° has not yet acquired this good habit, and efforts should at once be made to get its heat-regulating machinery into better working order. The graduated bath is one of the best methods of accomplishing this. (See p. 3.)

Continual Sucking, as induced by the Comforter.—This is an exceedingly bad habit, and one that will entail much crying to cure. A mother should prohibit the use of such a thing by her nurse, and it must be remembered that, never known, it is never wanted by a child. The usual history is as follows: A child is uncomfortable and cries. It is not the hour for his feed, and instead of trying some of the many devices mentioned on p. 22, one of these misnamed articles is placed in his mouth to save trouble. Anything between the lips of a young baby is a stimulus which evokes instant response by sucking, and this is of course associated in the infant mind with warm, comforting fluid. Some sensible children find out the deception quite quickly, and drop it with rage; others, more patient and less sharp, suck on and on in hope of comfort. A few repetitions of this response to crying set up in these latter children a definite habit, and knowing what they want, they will continue crying till they get it.

This continual sucking induces an increased flow of saliva, which is swallowed together with a quantity of air, and causes flatulence and colic, besides interfering with the rest which the digestive organs need between meals; it also alters the shape of the soft palate, and predisposes to adenoid growths; and the 'comforter' itself is a frequent cause of septic intestinal derangements, owing to the numerous micro-organisms it gathers when dropped on the floor, or when keeping company with soiled handkerchiefs in nurse's pocket.

A child should also be taught always to wash the hands before eating, and never to put anything in its mouth which has fallen on the floor.

A baby, if healthy and brought up to good habits, is a very contented little creature. Until five or six months old, the pleasure of kicking and playing with its hands and feet is all-sufficient. After this age, an india-rubber or rag doll will amuse for hours, but the child should not be allowed to sit up to play until nine months old, and then only occasionally. If tired of lying flat, the child must be well bolstered up with pillows.

TOYS.

Contentment is a great virtue to be cultivated in the nursery, and no good nurse will tolerate continual crying and whining; indeed, as a rule, they are the result of having nothing better to do. A child will often amuse itself for a long time by running round the table, singing as it goes, and when tired of that will be ready for some toys. A nurse should husband her resources, and should never allow all the toys to be had out at once. It is a good plan to keep certain toys in reserve for wet days, e.g., a doll's cradle with its bed-clothes and doll inside, or a horse and cart which can carry loads of bricks, etc.

Most children, as soon as they can run, enjoy toys which they can push or pull about after them ; strong unpainted playthings, which will bear rough treatment and regular washing, are the best. Celluloid toys should be avoided, as they are highly inflammable. Children like to imitate their elders, and a needle and cotton with a small piece of flannel will amuse for a long time, if only allowed occasionally. A pencil and paper, blunt scissors and paper, or large glass beads to thread, are always a source of delight, and from a farmyard or Noah's ark a child will soon be able to pick out the animals correctly.

At about two years old pictures begin to delight, but, until a child can be taught to turn the leaves carefully, they should be shown only, lest he become destructive. A large linen scrap-book which he can help to make should be begun—full of colour and familiar objects. All pictures should be of a pleasing character and true to nature, for a child should not have to unlearn what it has once learnt. A little later a sand heap in the garden, and clay-modelling in the nursery, will help to foster the constructive spirit, so lamentably deficient in many children when first sent to school.

A child should always be taught to put away one set of toys before bringing out another, and little dots of eighteen months will soon learn what tidiness means. The nursery should be a happy place ; of course, every child likes to come downstairs to its parents, but, if the nurse have a true mother-nature, it will be just as ready to go back again.

Pet animals are by no means free from danger. Dogs, cats, and birds have proved in many cases to be the source of infectious diseases.

NORMAL PROGRESS.

Roughly speaking, a normal child at—

2 Months—Should take some notice of coloured balls, and follow them with its eyes ; smile when pleased, and coo to itself ; and lift its head an inch or so.

4 Months—Should be able to hold the head erect, know its mother—especially by her voice ; show active signs of pleasure at toys or outdoor clothing ; use the hands with more precision to grasp things within reach.

6 Months—Should begin independent investigations by sight, touch, and taste ; sit up ; like to be sung to. Often begins to be shy of strangers. Laughs and crows with pleasure, and screams if displeased. The legs should be almost straight.

8 or 9 Months—Should now begin to imitate ; use syllables, such as *ma*, *pa*, *na*, *ta*, without any distinct meaning, but begin to associate words with things ; jump up and down vigorously on the knee.

12 Months—Should indicate by signs many objects correctly ; say a few words, and understand many more ; should be able to pull itself up and stand alone, and perhaps walk a few steps. The fontanelle should be no larger than a shilling.

18 Months—Should enjoy coloured pictures, and use more words,

coupling several together. Should walk well. The fontanelle should have closed.

2 Years—Should have a vocabulary of several hundred words, and use simple phrases correctly.

LESSONS.

A child for the first four or five years should learn simply by object lessons, and will thus lay the foundation for after-study. In teaching the names of objects, it is far better to give the true name at once, e.g., *horse*, not *gee-gee* ; *dog*, not *bow-wow*. As the child gets a little older, it is confusing to know the same object by two different names.

The training of the special senses, however, should be begun early and on large lines, e.g., naming objects at a gradually increasing distance ; listening to the different clocks and bells outside, and distinguishing between them ; drawing familiar objects with chalk on a nursery black-board, standing up and using the whole arm ; colouring large outline pictures with chalks, etc. ; but allowing no details requiring small movements and concentration of sight. At six years old a Kindergarten may be thought about, but fine work allowed only for short periods. The companionship and corporate life of the school are most useful in counter-acting the individualism of the home, especially in the case of only or eldest children, for whom a pre-kindergarten school, on the lines of Mme. Montessori, if available, is often a great advantage.

If a child be sent to school, it is useless to be always coddling it up and keeping it away for the slightest thing ; but the following three classes of children require to be surrounded by specially favourable conditions during their school life :—

1. Children who are specially backward or neurotic.
2. Children who have had a disease which, under unfavourable circumstances, will almost certainly recur, e.g., tuberculous glands.
3. Children whose parents have suffered from diseases which are very apt to be transmitted to their offspring, e.g., consumption or nerve complaints.

CHILD'S RECORD.

It is a good plan for mothers to keep a notebook for each child. It should contain :—

1. A weight chart, which she can copy from the one in use in the nursery ; for 12 months, marked every fortnight ; for the next year, marked every month ; and, after this date, every 6 months during childhood.
A page ruled for weight, height, chest measures and head measures to be entered at 1, 3, 6, 9, 12, 18, and 24 months, then every 6 months till six years old, thereafter on the child's birthday.
2. Details during the first two years of teeth, talking, walking, etc.
3. Dates and details of illnesses.
4. Remarks on each birthday as to progress, disposition, etc.
5. Dates of entering schools, and particulars of progress there, etc.

MORAL TRAINING.

Children's rules must be few in number, but what there are must always be enforced.

Voluntary Obedience.—This will entail some struggles, but will follow on much more easily in those children whose physical training has been conducted in the systematic manner described (pp. 76–78). The child must be brought to see that the mother's or nurse's will is stronger than its own—then, and not before, will it give in. On this point, as indeed on every point, the mother and nurse must act as one: a child must not be allowed to do a certain thing downstairs which it is forbidden to do upstairs, or *vice versa*.

The obedience must be that of love, not terror, and a little tact is here of great use. To tell a child not to do a thing is but to create the wish to do it, which is just human nature the wide world over. Do not be content with the negative, always suggest something positive: forbid a child to open a drawer, and at once it will begin to be restless and fidget about, and at length will probably go up and open it. But if the prohibition be accompanied by a positive request, e.g., to fetch mother's thimble, the difficulty will be over; the desire to open the drawer will be forgotten, and will consequently vanish.

Direct disobedience should never be overlooked; but never as punishment deprive a child of its food, or shut it up in the dark. Taking away anything it is very fond of, e.g., a favourite doll or toy, will be acutely felt. Being made to sit quietly on a stool for ten minutes is another good method.

In very extreme cases, e.g., an act of direct spite or cruelty, a sound slap may be required, but should only be administered by the parent. It is better, however, if possible to reproduce the act, e.g., if a child pinches the baby, to do the same to him to show him what it feels like. Never box a child's ears. Parents, when obliged to punish, should always make the child feel how grieved they are to be forced to do so, and that it is not inflicted in the spirit of revenge. Favouritism should be carefully guarded against, always remembering that children have a very keen sense of justice.

A child often passes through a phase in which there is an extreme dislike to obeying the slightest command, even in the ordinary events of life, but it is as a rule only temporary.

Should he, for example, absolutely refuse to be dressed to go out, take no notice of the refusal, but while beginning to button his shoes talk of the little ducks he is going to feed in the park, or remind him of the game of hide-and-seek he loves, so that by a lively recollection of the past, or anticipation of the future, he will quite forget the objectionable present. Should these tactics, however, fail, it is of no use to lose one's temper. Give way pleasantly, saying, "Very well, if Baby will not be dressed, of course he cannot go out, but he will have to stay all alone in the nursery," and there he must be resolutely left to realize the necessary consequence of his wilfulness. A good fit of crying will probably result, but the lesson will be thoroughly learnt.

A mother should remember that when a child has lost his self-control, it is useless to reason with him. He should be left absolutely alone till he

is good, wholesome neglect being too little understood and practised in many nurseries.

Truthfulness.—A child must at all times be encouraged to tell the truth. Never mind what he has done wrong, let the little one always find in his parent or nurse a friend to whom he can confess and tell everything. To punish a child when he comes to confess a fault, is but to set a premium on telling a lie. Let him clearly see your sorrow for the wrong deed, but do not punish. Many a child has been driven to tell a lie from fear of the consequences of telling the truth. A tiny child will say ‘Yes’ or ‘No,’ just as it feels inclined, not really knowing the difference; but of course this is an entirely different thing from telling a lie.

Self-control.—This habit is one of the greatest assets of a child in after-life. The mother and nurse must be living exponents of it, and train by example. A one-child nursery is not a good training school for character, and should be supplemented as early as may be by the company of other children, that the child may learn, unconsciously, to ‘give and take’ with cheerfulness. Selfishness, or lack of self-control, should result in instant removal from the scene of play. This treatment will not often require repetition.

Loving-kindness.—This includes a great deal. It is necessary primarily in the parents and the nurse, and the example shown by them of uniform loving-kindness, under the most trying circumstances, goes a long way in teaching it to the little ones. The elder should always share with the younger, but the younger ones must not have the best of everything.

Never allow a child to snatch from any one; teach it to ask for a thing nicely, and if baby has taken an elder child’s toy, the latter should be taught to give baby something in exchange for its own property.

Never allow a child to cherish a spirit of revenge. How often, if he falls down, is he told to “Whip the naughty floor,” or chair, as the case may be, or even allowed to vent his wrath upon some naughty person who displeases him. No; tell the children to “Kiss the place and make it well,” or rub in a little eau de Cologne, and he will be pleased and quite forget to be angry.

Of slight falls and knocks it is best to take no notice; too much sympathy engenders a fretful disposition, easily upset by trifles. Gentleness and loving-kindness to all living creatures should be insisted upon.

There is a great difference between animal spirits and rowdiness. It shows a painful want of training for children always to rush into the sitting-room, slam the door, and stamp on one’s toes in their wild spirits. A lack of reverence is very noticeable in the youth of the present day, and respect for elders should be early enforced. At the same time, the personality of the child should be respected, and as kissing any but the nearest relatives is not only disliked, but is often a danger-carrying proceeding, he should be taught to hold out the right hand prettily to friends, and not expect to be kissed.

The Nervous System of a child should receive a great deal of attention from quite early days. It is exceedingly sensitive, i.e., it responds

instantly and intensely to any outside influence, and if stimulated unduly, many serious troubles may arise. For this reason a young child should not be constantly played with or talked to. When awake it should lie quietly in its cot or on a sofa, where it can watch people moving about, and outside impressions can be received slowly, as the nervous system can bear it. A precocious child is one to be dreaded, and to be kept especially quiet, and *never* have its sayings or doings repeated in its presence, much less be encouraged to perform before admiring visitors.

A child should never be frightened, and stories of ghosts, bogies, fire, and robbers should be left untold. Ugly sights and discordant noises, e.g., Guy Fawkes and Punch and Judy shows, strongly affect some children, and should then be avoided for a time, gradually training the child to calmness and self-control in the presence of strange sounds. In these children a sudden terror has produced fits, or St. Vitus's dance, or has caused a shock from which the child has never really recovered. They are often the victims of nervous tricks, e.g., twitching, making grimaces, nail-biting, etc., which require a doctor's attention, and also—which is really essential with these nervous children—a calm, quiet open-air existence. There should be practically no occasion for choice of action, which generally is a great difficulty and leads to much expenditure of nervous energy before a decision is made; so that a systematic rule of life, under healthy and pleasant conditions, rendering excitement and special treats unnecessary, is of the utmost importance. Night terrors, when a child awakes crying with fright, have often their origin in *days* of excitement.

Bad moral habits are, unfortunately, far too common. Quite small boys may handle their private organs, or baby girls rub their thighs together, and a little later use their hands to produce friction of the parts, thus laying the foundation for ill-health and moral degeneracy. Boys often require circumcision, and both boys and girls should be trained to go to sleep on their side with hands folded on the pillow or outside the bedclothes. This should be done from a few months old, but if a little later there is any difficulty, or, on examination when asleep, the hands are found near the parts, the first blanket should be tightly tucked in under the armpits, so that the child cannot get its hands down. Pyjamas, made all in one, should be worn by both sexes for some years, and, as it often occurs before going to sleep, it is a good plan to allow a doll to sleep on the pillow, to provide an outside interest. By the time the child is three or four years old it can be taught that the habit will make it ill, but till reasoning is possible, measures must be taken to make the act physically impossible.

Usefulness and Tidiness.—These are important items in a nursery education. All toys should be put away by the children themselves, and it is astonishing how tidy a child of two years old may become, even putting away things that its mother may have left about. A child delights to be made useful; to fetch and carry little things from one room to another, to fetch its father's slippers, or mother's gloves; to pretend to

dust the furniture—all these things and many more go to make up a great deal of happiness for a child, and, at the same time, teach it many useful lessons.

It will thus be seen that moral training requires much wisdom. A spoilt child is a nuisance to itself and everyone else, and a lasting monument of disgrace to its guardians.

SICK CHILDREN.

A few words must be added on the subject of nursing sick children. All mothers are advised, when convenient, to pay a visit to a children's ward or children's hospital. The art of nursing sick children is to be seen there at its best, and mother will then understand that, in cases of real illness, *knowledge* as well as loving instinct is required, if a child is to have the best chance of recovery. If, unfortunately, her child is stricken with a serious illness, a mother must consider :—

1. Shall I be able to nurse the child myself ?
2. Will it be best to have a trained nurse ?
3. Will it be best to send the child to a hospital ?

Respecting the first point, she must remember that in order to nurse the child properly she must devote all her time to the patient. It is useless to think of carrying on her ordinary household duties while acting the part of nurse. Her own health and the well-being of her husband and other children must also be considered ; and last, but not least, she must decide whether she is competent to carry out all the doctor's orders and to stand the strain of responsibility.

If the answer to No. 1 be in the negative, those to No. 2 and No. 3 will be mainly questions of expense. If this need not be considered, it is in almost every case best for both mother and child to have a thoroughly trained nurse, accustomed to children, for at least the acute stage of the illness. The mother will, naturally, assist her, and take her place when ' off duty,' and she will be able to learn the best way of performing many little nursing details, which she will be glad to turn to good account at another time, especially if she have several little ones.

It is in illness that a wise mother will reap the benefit of her careful training in good habits—sleeping, feeding, obedience, etc. A sick child requires a great deal of ' letting alone.' The quieter it is kept in its cot, not dandled in the arms, the better. The struggles of a spoilt child over taking its medicine or food have often gone a long way towards causing a fatal termination. In nursing sick children there must be infinite patience, but invincible firmness ; a vast amount of tact, but absolute truthfulness. If something nasty has to be swallowed, there should be no saying : " Now, darling, will you take something nice ? " Once deceive a child, and it will never trust you again. Truth is essential ; to say—" Now, darling, you must take this ; it is not very nice, but will make you better, and you shall have a piece of chocolate after it," is far better policy, and will nearly always succeed with a child who has been brought up to obey.

Should the child refuse, it is best not to worry and irritate it, but to lift it gently out of bed, wrap a sheet round it, with the hands by the sides, gently hold its nose, and, when the mouth opens, put the spoon containing the medicine as far back as possible, keeping it there until the fluid be swallowed. This may, in some cases, apply to feeding. There must be no sign of anger or impatience on the nurse's part, but the operation should be performed just as a necessary consequence of the refusal on the child's part to take food or medicine. It will not often require repetition.

The strength of a child should be carefully husbanded. If ordered to bed, it should be kept lying down, and, if really ill, other children excluded. Reading or relating to it little histories of its every-day life are usually great charms to a child.

The nurse of a sick child cannot go on continually without being relieved, for one who is overwrought and tired out cannot be cheerful and patient. A competent person must take duty while the nurse has exercise and sleep.

In cases of serious illness it is always well to keep a chart, and note down every time the patient takes food, sleeps, has the bowels open, etc.; for example:—

7.0	a.m.	-	-	-	took 4 oz. milk.
9.0	„	-	-	-	temperature 103°; took medicine.
10.30	„	-	-	-	6 oz. of beef-tea; bowels open.

This acts as a guide to the doctor as well as to the nurse.

A sick child is soon up and down, and, when on the road to recovery, often traverses it with rapid steps. Convalescence is often a more trying time to the nurse than any. A new picture book, or some Kindergarten work to employ the hands, is now called for; but, as a general rule, a child recovering from a severe illness will sleep a great deal more than when in health. This is one of nature's methods of renewing the waste to which the tissues have been subjected, and should be encouraged as much as possible.

The Sick Room, except in some cases of brain and eye disease, should always have plenty of light and fresh air.

In fever cases the room requires special treatment, elsewhere described.

After any illness, e.g., influenza, measles, sore throat, severe diarrhœa, etc., it is a good plan to disinfect the nurseries by means of formalin. A lamp (*Fig. 20*) can be bought which vaporizes tablets of formalin. The windows, doors, and fire-place are closed, sheets or dusters are tucked into cracks, the mattresses are raised as for airing, and drawers and cupboards

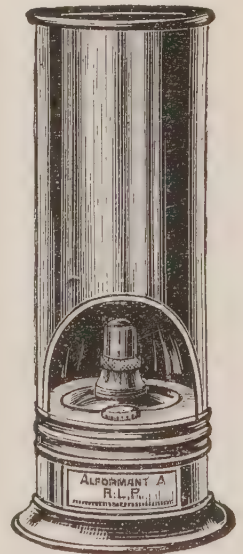


FIG. 20.
Formalin Lamp for
disinfecting rooms.

opened, and the lamp, after being placed inside a pail for safety's sake, is lighted. The number of tablets to be used is regulated by the size of the room.

The room should be left from six to twelve hours before being opened, and should then be thoroughly cleaned. This proceeding will often prevent influenza from spreading through a household, or from causing recurrent attacks among the children.

CHAPTER X.

BABY'S TROUBLES.

Vaccination—Small-pox—Teething—Milk Teeth—Order of Teething—Disorders of Teething—Cleaning the Teeth—Permanent Teeth—Feverish Attacks—Temperature—Thermometer—Pulse—Respiration—Influenza Cold—Constipation and Diarrhœa—Thrush—The Navel—Incontinence of Urine—Circumcision—Adenoids—Rupture—Prolapse of the Bowel—Harelip—Cleft-palate—Tongue-tie—Club foot—Heart Disease—Deaf-mutism—Idiocy.

IT will now be well to consider some of the minor troubles which baby may, at one time or another, be called upon to endure; for an infant, however healthy, is subject to little ailments which every mother should be prepared for, and know how to treat.

VACCINATION.

The object of vaccination is to protect the child from small-pox. Many mothers have very strong objections to having their children vaccinated, which they base on the following grounds:—

1. It pains the child.
2. It may introduce diseases, and even cause death.
3. It is unnecessary, and practically of no value.

Now, the operation itself is hardly painful at all, and the younger the child the less it is disturbed by the after-effects. Some children 'take' much more than others, and so suffer more afterwards, but it is rare for a child to be upset for more than a day or two. As to the introduction of disease, this practically never happens, and could arise only through great want of care. That it is valueless can hardly be maintained in the face of facts. Indeed, we now hardly know what small-pox is. The value of vaccination is amply demonstrated by the fact that no nurse or attendant in the small-pox hospitals ever takes the disease, because efficiently vaccinated.

The following statistics are taken from a small-pox hospital:—

Of every 100 persons admitted, 35 per cent died who had never been vaccinated, 4 per cent died who had two vaccine scars, while only 1 per cent died who had four vaccine scars.

Vaccination should be postponed if the child have a skin eruption, or be in a state of ill-health.

It is supposed by law to have been performed by three months after birth, and in any case should be well over before teething begins. It is, however, a very usual custom now to vaccinate babies at about a month

old or even earlier. In some maternity hospitals the babies are vaccinated when a few days old—and with most happy results—the small patients appearing to take no notice whatever of the proceeding, and as they move about less at an early age, there is less irritation.

It is usual to vaccinate in three or four places—as the protection afforded by one or two scars is much less complete—high up on the arm or on the leg, taking care that the insertions are not too near together, or they will run into each other and produce a large sore. A small red pimple will be observed on the third day, at each insertion, and on the fifth day the red pimple turns into a spot with a watery head. This spot slowly enlarges, and the skin around it becomes red, hot, and tender. About the tenth day the place bursts and discharges, whilst the centre dries up into a black scab, which falls off on about the twentieth day, leaving a depressed scar. An arm that is not practically well by three weeks should have medical attention.

The child usually suffers most from about the eighth to the eleventh day, and may be slightly feverish, off its food, and restless. The amount of discomfort, however, varies very much—many children not suffering at all.

It is of importance that the places be not subjected to friction, or violence of any kind, otherwise the spots will get broken, or have their tops knocked off before the proper time. Many mothers use vaccination shields, but they are usually most inefficient, and apt to get out of place, thus creating the very evils they are meant to avert. A pad of anti-septic gauze can be fastened on about the eighth day, and be left undisturbed. Some doctors paint the sites of inoculation as soon as dry with some impervious solution, e.g., zinc gelatin, which forms a protective covering, and enables the child to have its bath as usual. It is no uncommon thing for a rash to appear within a few days, but it is only of a temporary nature.

It must be remembered that as time goes on the effect passes off, and it is better to be re-vaccinated at ten, and again at twenty-five years. In Germany, where compulsory vaccination and re-vaccination are thoroughly enforced, small-pox is practically unknown.

TEETHING.

A baby's first set of teeth has been formed before birth, and is more or less influenced by the mother's health, but the date at which the first tooth appears is very variable. Occasionally it is seen at birth, and on the other hand, rickets or any acute illness will delay dentition.

The order in which the teeth should be cut is as follows :—

The Milk Teeth.—About the seventh month the two middle teeth, or central incisors, in the lower jaw. A few weeks later the four incisor teeth in the upper jaw. There may be an interval before the lateral incisors at the bottom appear. By twelve to fourteen months the four back molars should be through, and by sixteen to eighteen months the four canines or

eye teeth, the other four molars following by the twenty-fourth to twenty-sixth month.

The above constitute the temporary or milk teeth (*Fig. 21*). If not cut in the right order, baby is said to cut its teeth 'cross.'

Many healthy children cut their teeth with very little trouble, the teeth being through before the mother is aware of it. On the other hand, the age being one of rapid growth and instability of the whole system, there may be disturbances during this period, and perhaps with each tooth.

1. Feverishness, restlessness from the gum being hot and swollen, cold in the head, perhaps leading to bronchitis.

2. Loss of appetite, constipation, or diarrhœa.

3. Spots, or eczema.

In any of these cases the child needs extra care. The food should be given rather weaker, and if thirsty, drinks of plain boiled water or weak

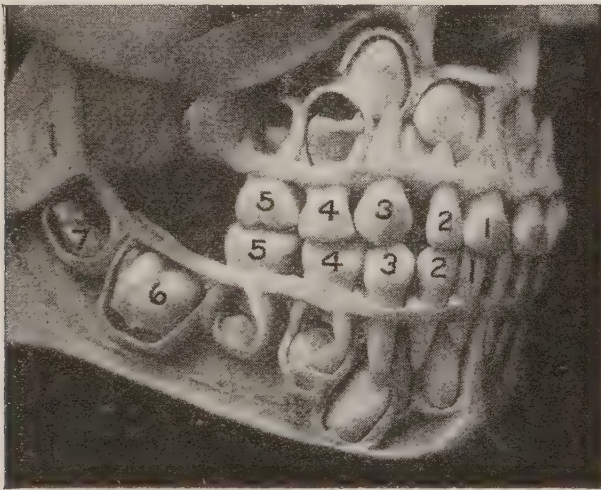


FIG. 21.—Showing the upper and lower temporary teeth of child (about 6 years old) on one side. (1, 1) Central incisors; (2, 2) Lateral incisors; (3, 3) Canines, or eye teeth; (4, 4) First molars; (5, 5) Second molars. Most of the permanent teeth can also be seen, almost ready to erupt: (6) 6-year molar; (7) 12-year molar.

barley-water be allowed. If very restless at night, a little bromide is useful, or a warm bath may be given as on p. 93.

The child should be protected from damp or cold winds, and care be taken, by using a jaconet bib under the ordinary one, that the increased dribbling does not damp the clothing and cause a chill.

The bowels should be kept well open, but in the event of diarrhœa this should not be allowed to become at all excessive. The child's hands must be frequently washed, as they are apt to be thrust into the mouth; and if an ivory ring be given to bite, it must be cleansed with boiling water each day.

Convulsions during Teething are not very common, and if they occur, it will generally be found that they are really due to rickets. A hot bath

and dose of castor oil are the best immediate treatment. Lancing the gum should not be done too early, as the point of the tooth will then have difficulty in piercing the scar.

How soon should a child's teeth be cleaned? As soon as it has any. A soft tooth-brush should be obtained as soon as the eight incisors are cut. A little good soap may be used occasionally. No biscuits or sweets should be given after the teeth have been cleaned at night, as this causes decay, and the mouth should be rinsed after each meal containing starch or sugar.

It is a great mistake not to look after the milk teeth carefully, as upon their welfare depends, at any rate to some degree, the welfare of the permanent set; any severe illness before six years old has a bad influence on the formation of the permanent teeth. The development of the jaws can be assisted by giving crusts and baked bread at meal times, and later on, hard biscuits.

The Permanent Teeth should be cut in the following order:—

7th year.—Four first molars, called 6-year molars.

8th year.—Four central incisors.

9th year.—Four lateral incisors.

10th year.—Four first bicuspid.

11th year.—Four second bicuspid.

12th year.—Four canine or eye teeth.

13th year.—Four second molars, called 12-year molars.

17th–25th year.—Four third molars or wisdom teeth.

The temporary set consists of twenty teeth, the permanent set of thirty-two.

At about four years old a child should be taken to a dentist to have his teeth examined, and should then go to him regularly every six months, as the least decay should be arrested. It is a very common thing for teeth to be too near or too far apart, or to be too prominent, and to require regulation.

FEVERISH ATTACKS.

The nervous system of a baby or a young child is delicate to a degree, and that which would not in the least affect an adult may, in an infant, produce a bad feverish attack. In some instances the cause is easy enough to detect; it may be true 'influenza,' or the child may be cutting a tooth, has caught a cold, etc.; but very often the cause is so slight as to escape detection.

The signs of a feverish attack are:—The child is off its food, is restless and irritable, the skin is dry and hot, especially the head, which often feels burning, the breath is short and quick, and the pulse beats very fast.

The child should be kept quiet and away from other children, as it is very sensitive to noise, and will probably start at the least sound.

If the bowels be confined, a teaspoonful of emulsion of paraffin or syrup of figs may be given; and if the child is restless give it a hot bath, as described on p. 93, and put it to bed.

It is of no use to press it with food : this will only induce vomiting. For the thirst, weak milk and water or plain boiled water may be given. It is astonishing how quickly a child will 'take a turn' ; one hour it may be lying exhausted, with hot flushed cheeks and a burning skin, panting, and tossing to and fro in its restlessness, whilst the next it may be calmly dozing with a cool moist skin, and sucking its thumb in contentment.

Yet remember that almost all illnesses begin with more or less fever, and what at first may have been taken as 'only one of baby's feverish attacks,' may afterwards turn out to be the beginning of a long and serious illness.

Temperature.—The amount of fever can easily be ascertained by means of a clinical thermometer (*Fig. 22*). Every mother of a family should possess one, and know how to use it. This instrument is exactly on the



FIG. 22.—Clinical thermometer.

same principle as an ordinary nursery or bath thermometer, but on a smaller scale, and contains an index, the top of which marks the highest point to which the mercury has risen. The natural body heat is $98\frac{1}{2}$ degrees (Fahrenheit). This mark on the scale of the thermometer is usually noted by an arrow. The way to take the temperature of a child is as follows :—

Shake down the index of the thermometer until it is below the arrow ; now draw the child's arm away from the side and put the bulb of the thermometer well up into the arm-pit, then hold the arm close against the side of the chest for five minutes ; on removal the top of the index will mark the temperature. It is more convenient with an infant to take the temperature in the fold of the groin ; the thigh should in this case be bent up so as to bury the instrument in its crease. The skin should be gently rubbed before insertion, as any perspiration will prevent accuracy. Care must be taken that no article of clothing intervenes between the skin and the thermometer, and that the instrument does not shift from its proper position. Sometimes the temperature is taken by introducing the bulb of the thermometer into the lower end of the bowel ; the reading will then be about a degree higher than that taken on the surface of the body. The price of a good clinical thermometer is about three shillings.

A slight cold will often send the temperature of a child up to 102° or 103° , and it rises even higher in bronchitis or measles, but it has less significance in a child than in an adult. A temperature which rises every evening, or is persistently above the normal, calls for medical advice, even although there are few other symptoms.

Pulse and Respiration.—Both of these usually have a certain relation to the temperature, i.e., if the temperature goes up, the pulse and respirations will increase in number, and *vice versa*. Both are normally more rapid in children than in adults.

The Pulse-rate at birth is about 150 to the minute ; during the first year it keeps above 100 ; during the second and third years it is 100, or rather under ; during the fourth year 90, and during the fifth 80. It can easily be counted, as in the adult, by feeling the number of beats of the artery which is at the front of the wrist, about two inches above the root of the thumb ; but for a young child another convenient way is to watch or feel the beating of the pulse in the brain at the anterior fontanelle or hole in the skull. This is, of course, only possible under about eighteen months, as it should then be closed.

The Normal Breathing of an infant a month old is about 40 to the minute ; at two years old 30 ; and at eight years old about 20. Both pulse and respiration should be counted during sleep. The least thing will send up either the rate of breathing or the pulse at once, but no amount of restlessness or excitement will raise the temperature much above the normal. An increase in temperature always means fever.

INFLUENZA COLD.

Infants are very liable to contract heavy colds ; their skins are so sensitive and their whole being so delicately constituted, that they are naturally very susceptible to changes of temperature. Much, however, can be done to lessen the sensitiveness of the skin, and full directions are given in *Chapter I*. The graduated cold bath there described is considered to be one of the most valuable means of promoting a healthy resistance to disease germs.

The mucous membrane of a child is specially apt to spread a cold, e.g., a cold in the nose or throat is far more likely to spread down the bronchial tubes to the lungs in the case of an infant than in an adult. Anything that lowers a child's vitality renders it more liable to catch cold, especially by direct infection. A germ enters, the tissues have not sufficient vigour to dispose of it, so it settles down and begins its evil work. This lack of resistance may be brought about by insufficient food and warmth, or by excessive warmth ; but the most frequent cause is bad air, i.e., air which has been breathed over and over again. On a wet or damp day, perhaps, several children are kept shut up in a nursery all day with the windows and doors closed. In a few hours all the pure air will have been used up, and then they will be breathing over and over again the same air charged with noxious gases. The following day being fine, but damp, the children are sent out-of-doors, and catch cold. If they had been turned out of the nursery for half an hour three or four times the day before, the room thoroughly aired, and the windows kept widely open while they ran about, they would probably have escaped.

Another frequent cause of colds arises from a false idea as to 'hardening.' Whilst a child is very young, the skin of the head is just as delicate as the skin elsewhere, and must therefore be protected from draughts. In a room airy but not draughty, no covering is required ; but if taken across a landing, with windows open on all sides, as is quite right, a little woollen shawl should be thrown over the head. When nature has

provided a covering of hair, or the skin of the head is hardened by the daily application of cool water and friction, no wrap is required.

A child properly clothed will take no harm in passing through draughts, but to remain stationary in a direct draught will probably bring on a cold. The rule to be observed is, plenty of fresh air, but no draughts. Acute nasal catarrh being very infectious, a baby should not be kissed or nursed by any one suffering from this disorder.

A baby's cold usually begins with a running of the nose by day, whilst at night the upper part of the nose is apt to become stopped with mucus, which prevents the passage of air through the nostrils, and causes it to sleep with its mouth open. In this case the air in the bedroom must be slightly warmed. A bad cold interferes with sucking, a fact which is very noticeable when the child takes its food. He may at the same time be feverish, restless, and have little appetite. His nose should be kept very clean, and as soon as he is old enough he must be taught to blow it thoroughly.

If the weather be cold he must be kept strictly indoors, and at an even temperature of 60° to 62°. The room should be well ventilated and not allowed to get stuffy. In summer, the child may be allowed to go out on fine days if the outside temperature be 64°. The diet must be slightly decreased; over-feeding is certainly not to be tried. The bowels should be opened once a day, but no strong purgatives should be used. The stuffiness of the nose may be greatly diminished by gently inserting into the nostrils a new camel's-hair brush with a little vaseline and eucalyptus oil, a drachm of the oil to an ounce of the vaseline. Grease may also be well rubbed in over the root of the nose. The most effective plan is gently to syringe the child's nose with saline solution (a measured drachm of salt to a pint of warm water), the head lying over the mother's knee. Little nasal syringes are sold for this purpose.

A bath at 105° in front of a fire, the child being entirely under water with the exception of its head, and kept in for five minutes, will often help to get rid of a cold. It should be lifted out of the bath into a warm blanket, rubbed dry without being uncovered, and put quickly into a warmed bed.

CONSTIPATION AND DIARRHŒA.

Both these conditions constitute a departure from the normal state. What is the normal state of things? For the first two months of life there should be from two to four motions daily, largely depending upon the amount of milk taken. They should resemble freshly mixed mustard, and only have a sour smell. From two months old there should be about two motions daily, which gradually become of slightly firmer consistency, until at seven or eight months they are darker, firmer, and of a more distinctive odour. With children fed on whole milk the action will be larger than usual, but so long as the stools are yellow in colour they are quite normal. They are not generally formed until eighteen months. Of course children differ, and it may be normal for some to have only one

action of the bowels a day after six months old ; but while there should be distinct muscular effort involved, it should not cause pain, and the stool should not be hard or faintly streaked with blood. More actions than the normal would constitute diarrhœa.

If curdy masses are passed, these are, generally, not casein, but a form of fat caused by a too rapid passage through the alimentary canal, and occur in acid indigestion. In these cases soreness of the buttocks quickly follows. Sometimes, by washing a little of the stool in water, it will be found that the so-called ' curds ' are rolled up bits of membrane from the bowel wall, casein curds being extremely rare. A green colour is occasionally due to a sudden change in the weather ; and if the child is well in other respects, the stools may be expected to regain their usual colour in a day or two, and no notice need be taken. If there should be too much mucus in the stool, habitually, in children over six months, there is probably too much starch in the food. Plain whole milk should be substituted, and a doctor consulted.

Soft, greasy, and irritating stools generally mean that the child is not digesting the fat in its meals, while dry, crumbly motions denote too little fat. Large, white, putty-like stools are usual in over-feeding.

Constipation in Breast-fed Infants.—This is often troublesome. The mother's milk may have too little fat, in which case she should take more exercise and increase the protein part of her food, and she should also correct any tendency to constipation in herself by drinking more water, taking more stewed fruit, or a simple aperient, e.g., petroleum ; but not salts. She may have too little milk or, on the other hand, too much, which will require treatment as suggested on p. 58. Water should be given to the child twice a day at bath time, and emulsion of petroleum if constipation is still troublesome. Associated with the constipation may be attacks of colic, or hiccough with acid water coming up into the mouth, as shown by the child's grimaces and convulsive swallowing.

Constipation in Hand-fed Infants is less likely to occur than the opposite condition, if the child is taking a well-thought-out diet, i.e., one containing the proper amount of fat. A mistake, however, may have been made through the cream containing too low a percentage of fat (see pp. 32 and 41), or, if on whole milk, from the low percentage of fat contained in it. In this case ' top milk ' should be used, or a teaspoonful of olive or half a teaspoonful of cod-liver oil be given twice a day ; but this must not be overdone, or indigestion due to too much fat will occur. Should the diet be correct, it may be that the mother has not been careful to train the nerves and muscles to act *at the same time daily* (p. 38). If not, she must begin at once, although it will be more difficult than if she had started at birth. It is not necessary to worry if, as a very occasional thing, the child's bowels have not acted for even two days. Often it will be sufficient to touch the sphincter with the finger, and if that is not enough, to insert for about a quarter of an inch a tiny cone-shaped piece of soap, but withdrawing it immediately. All manipulations within the bowel are liable to increase the tendency to constipation, and should be avoided. If

absolutely necessary, a rubber-tipped syringe containing a tablespoonful of saline solution is sufficient.

For the *general treatment* of constipation, some of the following may be tried :—

1. Massage for 10 minutes, twice daily. (See p. 65.)
2. Warmth to the stomach and bowels by always using a knitted binder, to which is firmly attached the napkin or drawers.
3. Extract of malt, one teaspoonful in two bottles a day, especially useful in hard, lumpy motions.
4. Emulsion of petroleum, half or one teaspoonful, two or three times a day after food. Semprolin is a reliable preparation of this, and can be given without fear, as it is not absorbed, and therefore cannot upset the digestion.
5. An abdominal compress. A handkerchief wrung out of warm water is folded into an oblong of about 10 by 4 inches, and placed over the child's abdomen. A piece of oiled silk or jaconet large enough to overlap the compress in all directions is placed over it, and the whole is kept in place by a turn or two of bandage. The compress should be put on at bed-time and retained all night.
6. Two or three tablespoonfuls of cold boiled water twice a day at bath times, and, in hot weather, also between meals.
7. After one month old, a dessertspoonful of sweetened orange, grape, or prune juice before the first morning feed ; and after six months the juice of half an orange.
8. After one year, the pulp of a baked apple with brown sugar, the juice of a whole orange, or syrup of figs.
9. After one year the child should be placed in its chair at a fixed hour twice a day, generally after the morning bath and before the evening one. It must not be left there more than 5 or 10 minutes, as long-continued straining is apt to cause prolapse of the bowel. The child should be praised, if it have accomplished its 'duty,' as it is termed.

If none of these means are efficacious, a doctor must be consulted, who will probably order some simple drug—such as fluid magnesia, or phosphate of soda—to be put in the bottle ; or if the motions are clay-coloured, an occasional dose of calomel or grey powder.

Straining, with the passage of only mucus or blood, is a serious condition, and a doctor must be sent for immediately. (See p. 125.)

Diarrhœa in Breast-fed Infants.—This is a rare condition. If present, without evidence of its being the result of a transient attack of indigestion (p. 23), it is generally due either to an acute illness in the mother, or to want of care in keeping her nipples and the infant's mouth clean and free from micro-organisms. The latter multiply and set up putrefaction and fermentation in the intestines, causing green and watery motions.

Diarrhœa in Hand-fed Infants.—This is by far the most frequent and fatal illness to which hand-fed children are subject, especially in the summer. Of 15,000 deaths among children in New York, 13,000 were from this complaint. In our own country, 34 out of every 150 deaths of

infants under one year are from diarrhœa only ; and in an analysis of 710 fatal cases from this disease, 393 were entirely hand-fed, 287 partly hand-fed, only 30 having been fed on breast-milk alone.

Acute Diarrhœa generally begins with an attack of general indigestion, i.e., the whole digestive tract is upset, and vomiting is also present. The stools lose their yellow colour, and become green like chopped spinach, then brown and watery and very offensive, and finally colourless like rice-water, or they may be slimy from an excess of mucus. In some cases they are very irritating, and cause a rash on the buttocks. Their frequency varies very much, amounting in some cases to three or four times in the hour. The rapidity with which infants succumb to this disease is appalling. The breathing becomes quick and shallow, the portion of skin between the frontal bones of the skull sinks in, and the child, who at first was hot and feverish, now lies on its back, collapsed and cold to the touch. A plump, healthy child may be almost unrecognizable at the end of two days, the sunken eyes and leaden face giving it quite a different appearance.

The cause of the disease is the presence of virulent germs or micro-organisms in the intestines. That is why the disease is much more frequent and fatal in very hot weather, as they then multiply so rapidly, and it will at once be seen why a breast-fed baby has such an enormous advantage over his hand-fed brother, the possibilities of the former becoming infected being infinitesimal in comparison. Sometimes it sets in as a regular epidemic, June, July, and August being the worst months ; the poor are especially handicapped, it being difficult for them to maintain the necessary precautions. One drop of tainted milk may poison a whole meal and perhaps endanger a child's life.

It may be mentioned that the common housefly is a most dangerous medium of infection, as after feeding upon some putrefying mass it may next crawl over a baby's mouth or mother's breast, or fall into the day's milk supply. A crusade may well be started against this insidious foe, and boiled muslin, used like a mosquito net, should protect infants' faces when asleep.

Treatment of Acute Diarrhœa.—Call in a doctor at once, before the child becomes hopelessly ill. A diarrhœa should never go on unchecked. Give the child plenty of air, putting it into a large cool room. If possible, arrange that different persons should feed and 'change' the child. Auto-infection has been proved to play an important part in the relapses which are so frequent, and therefore the hands of the one feeding the child should run no risk of being contaminated by fæcal discharge. The child should be changed in another room than the one it generally occupies, and soiled napkins be removed immediately ; they should be at once placed in a vessel of cold water and Toxol, a teaspoonful to a pint, and after soaking for an hour should be washed and *boiled* before being used again. If possible, antiseptic napkins should be used, and burnt after use. The child should be kept very quiet, lying in a cot near a widely-open window, which should be on the cool side of the house in summer. A woollen

binder must be worn, a hot bottle kept near the feet, and the legs wrapped from toes to thighs in cotton wadding, lightly bandaged on. Moving from town into the country often proves beneficial in chronic cases.

To get rid of the offending germs and clear out the whole intestinal tract is the first thing to be done, and as the child is generally thirsty this can be the more easily accomplished. If there is reason to believe that there is irritating matter left in the bowel, the doctor will probably give a small dose of castor oil, and wash out the lower bowel with saline solution = 1 teaspoonful of salt to a pint of boiled water.

Persistently to give the child food when it is vomiting and has diarrhœa is absurd, although the mother gives it with the idea of 'keeping up the child's strength.' The child's inside wants a rest : to feed it up is to take away, may be, its only chance. Discontinue all milk food. Make a pint of albumen-water or whey (p. 60), and of this give one tablespoonful every hour for twenty-four hours—or longer. Should the child be collapsed, brandy, in the proportions given on p. 141, can be added to the mixture every third or fourth hour, and a warm bath with a small tablespoonful of mustard mixed to a paste with tepid water and then added to each gallon, will help to revive the infant. Two teaspoonfuls of raw meat juice may be alternated with the albumen-water with great advantage after twenty-four hours.

As the tissues waste from the rapid drain of fluid, it is often very helpful to inject slowly into the bowel, with a glass syringe, over the point of which a little piece of india-rubber tubing is slipped, 2 to 4 oz. of saline solution, for a baby under six months, at a temperature of 100°, holding the buttocks together to assist in its retention. This may be repeated every three hours.

Whey should be continued, and may be mixed with a few drops of sterilized cream and raw meat juice alternately. As the child improves, intervals should be lengthened to the usual, and the return to ordinary food must be by way of fully peptonized milk, and be very cautiously carried out.

The mouth should be frequently cleansed with boracic lotion, a new camel's-hair wash-brush being employed, a few drops of fresh lotion being poured into an egg-cup each time, and the brush being dipped into boiling water after use. All cups, spoons, bottles, etc., must be boiled after use, and it is a good plan to keep a small fish-kettle boiling in another room, so that there may be no chance of re-infection by these articles.

Chronic Diarrhœa may persist after an acute attack, i.e., vomiting may be only occasional, the tongue may be clean, the child does not often appear to be in pain, but the chart shows a stationary weight, or perhaps a slight increase one week with a decrease the next, the skin becomes dull-looking and rough, while the motions are irregular, being from four to eight in the twenty-four hours. If green, and frequently passed as soon as food is taken into the stomach, the cause may be a too rapid muscular action, which hurries the food through the intestines too soon. If the

motions are greyish, with shreds of mucus, there is still an unhealthy condition of the intestinal walls.

Treatment of Chronic Diarrhœa.—Frequently a reduction of food is necessary, especially where diarrhœa follows on feeding. Here it will be best to try the omission of the diluent altogether, and to sterilize the milk thoroughly in bottles containing 1, $1\frac{1}{2}$, or 2 ounces of good cow's milk with no extra cream. The quantity depends on the weight of the child, not the age. Full doses of sodium citrate must be given. Keep the child very warm and very still during and after the meal. Let the next meal, at an interval of three hours, consist of the same quantity of whey only. Continue this for twenty-four hours, and if the motions are becoming less frequent and a better colour, gradually omit the whey meals until the child is taking the milk each time. The weight should begin to rise after two or three days.

The great point is not to give too much until the stools are natural, and then to be guided by the weight chart. Should the motions continue to be abnormal in appearance, whey may be tried as described above, and peptonized milk for a short time; but these hints are only intended for a mother who cannot obtain medical aid.

Finally, the mother should carefully test the general hygienic conditions of the child as described throughout this book, especially remembering that abundant fresh air, constant warmth to the bowels, and the most fastidious cleanliness are all-important.

It may be asked how the amount to be given in a case of chronic diarrhœa is to be calculated. Weigh the child, find out by the normal weight chart what age corresponds with this weight. It will probably be two or three months younger than the child's real age. Turn to the Whole Milk Table, and find the amount given for that age. Halve that amount to start on, and gradually increase, but do not go beyond it. The Food Tables give a very generous supply for a child with good digestive functions, calculated by the average weight, and many children thrive well on a slightly less quantity. The foregoing remarks are not meant to apply to a very young infant, e.g., under two months. If used undiluted, without extra cream, it is very important that the milk should contain quite 4 per cent of fat, and a sample of milk should be analysed.

THRUSH.

Thrush is a disease shown by white spots in the mouth caused by the growth of a fungus. Hand-fed babies are far more likely to be attacked than those brought up at the breast. Sour milk, dirty bottles, and stuffy nurseries are all likely causes of thrush, which, as is only to be expected, is more prevalent in hot weather.

For the thrush fungus to thrive, the mucous membrane must be in an unhealthy condition. If the mouth has been cleansed by a finger and linen, slight abrasions are often caused, especially on the palate, and here the fungus will flourish. The great preventive is cleanliness, i.e., clean bottles and teats, freshly prepared food, and plenty of fresh air.

In a case of thrush, dip a swab of cotton-wool in glycerin and borax and let the child suck it, or pass it gently round the mouth, but do not insert the finger. The patches may also be painted with glycerin and boracic acid. In suitable weather the child should be kept out of doors in its perambulator as much as possible.

THE NAVEL.

The cord or navel-string generally falls off about the fifth day. Usually there is no trouble with it, especially if it has been dressed carefully at the beginning; but sometimes a little sore is left which is difficult to heal. A distinct prominence is occasionally noticed, and whenever the child coughs or cries this increases. The treatment for this trouble is pressure. A large bone counter, or boiled penny, is placed between two pieces of strapping wide enough to cover it completely (*Fig. 23*), and is then firmly applied over the navel. It should not be removed until it becomes loose, and should then be replaced by fresh strapping. In cases with large protrusion a proper surgical appliance will probably be required.

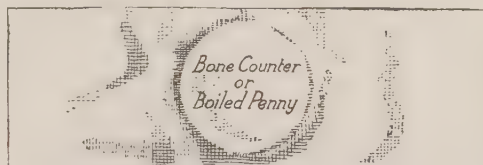


FIG. 23.—Pad for navel swelling.

INCONTINENCE OF URINE.

Some children suffer from wetting the bed even up to the age of four or five years. Some are simply cases of bad habit and neglect, but very often the child is not to blame at all, and many a one has been punished for no fault of its own. The first thing to do is to have the child examined by a doctor, to see that nothing is wrong. In many cases of boy children a slight operation will set all right at once. Boy babies should have the foreskin pushed back and the secretion washed away every day. If this cannot easily be done the doctor should be told, as the above-mentioned operation, circumcision, is best performed when a few weeks old.

If there is no local reason for the incontinence, patient management, assisted by suitable medicine, will almost certainly succeed. Never allow the child to sleep on its back, and, if necessary, prevent it doing so by tying a reel in position over the middle of the spine. Always lift the child the last thing at night, if possible once during the night, and the first thing in the morning.

ADENOIDS.

Adenoids are masses of overgrown tissue at the back of the nose, often associated with enlarged tonsils. They cause deafness, swellings of the glands, dry mouth, constant colds, and cough. If allowed to remain, the child has a stupid appearance, and may be stunted in body and mind. It may also suffer from incontinence of urine. If at all severe they should be removed by operation, and great attention be subsequently given to

breathing exercises, nose breathing during sleep, etc. In the latter case a pad under the chin, secured by a bandage, may be necessary for a few weeks if it has been ascertained that there is no nasal obstruction.

RUPTURE.

Hernia or **Rupture** is not uncommon even in very young infants. It consists of a portion of the intestine which has been forced through the abdominal wall, and can be felt as a lump under the skin. The groin is the most common place for a rupture, although one may appear near the navel.

When the child cries, the rupture will swell up and get larger ; whilst on the other hand, if it keep quiet and stop crying, it will become smaller and perhaps quite disappear. If the bowel should come down, and be nipped in the opening through which it escapes from the abdomen, the child will be in imminent danger. The bowel has become what is called 'strangulated' ; nothing can pass through it, and unless relieved it will mortify. When a hernia is strangulated, it will not go back into the abdomen, vomiting is quickly set up, there is constipation, and fatal collapse will soon set in if nothing be done to afford relief.

If an infant who is known to have a rupture be suddenly seized with vomiting and constipation, send for a doctor *at once* ; never mind whether the rupture appear down or not, appearances are often deceptive. The doctor will frequently be able to remedy the trouble without an operation. The longer a strangulated rupture is allowed to remain unrelieved, the greater the danger to the child. Never, under any circumstances, should a mother be tempted to try and press back the strangulated rupture herself.

No child is too young to wear a truss ; directly a rupture is discovered a truss should be worn. If it be allowed to grow up without one, not only will the rupture continually grow larger, but there will always be the danger of its becoming strangulated.

The truss should be worn day and night, and the parent should always be provided with two, in case of an accident. They should always be bought at proper surgical instrument shops ; an unsuitable appliance may do a great deal of harm. For young children they are made covered with india-rubber, to prevent soiling and enable them to be washed. If the truss be taken off for any purpose, the mother should always support with the hand the hole through which the rupture comes, else during a sudden movement or cry of the child it may descend.

The skin in the neighbourhood of the truss must be kept scrupulously clean and dry, and be dusted with a fine powder, such as Mennen's or Woolley's, or chafing will ensue. The truss should be considered as an article of clothing, and will then never be overlooked. If it be persevered in from birth, it may effect a permanent cure, and be safely discarded later. The great point is *never* to allow the rupture to come down ; its descent, even once, will undo all the good the past treatment may have effected. If a rupture persists, take the child to a surgeon, who will probably advise an operation for its radical cure.

PROLAPSE OF THE BOWEL.

This is usually produced by great straining, e.g., in diarrhoea or constipation. In this affection the lower part of the bowel comes down after straining, and protrudes from the orifice as a violet coloured mass. The great treatment is to regulate the bowels. As a rule the prolapse only occurs when the bowels act, and goes back of itself; if it should not do so, wash carefully, apply some vaseline, and use gentle pressure, the child lying on its stomach. If a child be subject to prolapse, the orifice should be supported by pressing the buttocks together whilst the bowels are acting, and he should never be allowed to sit long upon the vessel for fear of straining. In some cases an operation is necessary.

CONGENITAL DEFECTS.

Harelip is a congenital defect, consisting of a split through one side of the upper lip, usually extending into the nose. The child is generally operated on early in life.

Cleft-palate, which is often associated with harelip, consists of a split or division in the palate, so that the nose and mouth form one cavity.

A child with cleft palate has usually great difficulty in taking its food, because as fast as the milk is taken in through the mouth it returns by the nose. The child cannot create the vacuum in its mouth necessary for sucking, and so is unable to be brought up at the breast. It should be seated bolt upright when being fed, and an old fashioned boat bottle, with a long teat made for the purpose, employed, so that the flow of milk can be regulated by the inclination of the bottle, and no sucking be required. Of course the mother's milk can be given after it has been drawn off by the breast-pump.

Unless great care and perseverance be used, such a child will not get enough food, and will pine away.

Tongue-tie, really a very rare condition, is caused by the tightness of the fold of the mucous membrane which attaches the tongue to the floor of the mouth. The child occasionally needs to be taught how to protrude its tongue, and this can be done by placing a drop of syrup on its lower lip, or holding the nipple back till the tongue comes out to seek for it.

Club-foot is a permanent turning of a foot in a wrong direction, so that, when older, the child will walk on the inside or outside of the foot, instead of on the sole; the heel is usually drawn up at the same time. From the first days of life, manipulation, i.e., holding the foot in position, combined with rubbing the muscles of the leg and foot, is very useful, and should be employed several times a day. A little later a flannel bandage can be applied after the rubbing, and later still, pliable metal splints, carefully applied, will usually effect a cure. The treatment should never be discontinued until the foot is quite well. It is always a great trial of patience, but the parent will never regret the trouble taken.

As soon as he begins to walk, the child will probably require a light iron in the boot for a short time, to prevent the foot returning to its old distorted position. In a few months, however, the iron may probably be

discarded. These 'irons' are now usually made of steel, and are far lighter and in every way better than the old-fashioned ones. In some cases the tendons of the foot may be so tight and contracted that it becomes impossible to get the limb into a proper position without dividing them. This is a very trivial operation, and the little puncture made heals up in a day or two.

The great requisite for treating club-foot is patience. It is of no use to be in a hurry, and the parent must remember that any bandage, splint, or apparatus is not to force, but to gradually draw the foot into its right position. A strap or bandage put on too tightly will cause redness of the skin, and later on a sore that may require treatment to be discontinued for some days, and this waste of time has all arisen through being in too great a hurry.

The skin of an infant is exceedingly delicate, and every time the apparatus is changed, the limb should be carefully washed, dried, then bathed with a little spirit lotion, and well dusted with starch powder.

Heart Disease is usually evidenced by the dark blue colour of the child. A baby may, however, be of a bluish colour for a few days after birth, and then gradually assume a healthy rosy hue, and there may be nothing wrong at all. But if, after a few days, the child still remain blue, a malformation of the heart must be suspected.

Children with congenital heart disease are difficult to rear, any little cold or bronchitis, which in a healthy child would be of no consequence, being of grave import to them, as it gives the heart extra work. In bad cases the skin is of a dark blue colour, and the child pants for breath after the least exertion. Severe cases very rarely live to grow up.

Deaf-mutism.—An infant may be born deaf, and consequently will grow up dumb. When old enough, such a child should be sent to a proper institution, it being almost hopeless to teach it successfully at home. Well carried out lip-reading appears to give the best results.

Idiocy is a form of mental weakness which dates from birth. It varies in degree from a mere feebleness of intellect, to a state in which the mind seems wholly absent. Should a child fail to answer to most of the tests of normal progress given on p. 79, it must be considered backward, and systematic training should be early begun, because considerable improvement can then almost always be effected.

CHAPTER XI.

BABY'S ACCIDENTS.

Accidents—Burns and Scalds—Scorches—Bruises—Concussion—Cuts—Sprains—Dislocations—Fractures—Suffocation—Swallowing Foreign Substances—Choking—Foreign Bodies in Ears or Nose—Poisoning—Drowning—Bites or Scratches.

MANY accidents are due to sheer carelessness and neglect; still, it is a true saying that "Accidents may happen in the best regulated families," and the mother should know what is the right thing to be done in an emergency, and do it at once. It is almost as important to know what should not be done, as what to do, for many a trivial accident has been converted into a very serious one by misdirected zeal on the mother's part. The slightest doubt as to what ought to be done is a clear indication that a doctor should be sent for.

Burns and Scalds are very common among children, especially of the poorer class; about 3,000 lives are lost every year from these causes. Such accidents often happen through a lighted lamp or a vessel containing hot fluid being upset. Should a child's clothes catch fire, smother the flames with anything handy; your own dress if nothing better offers. Never wait and call for help, and never carry the child elsewhere, till every particle of flame has been extinguished.

Flannelette clothing is exceedingly inflammable, and should not be used for young children, unless it be one of the varieties which are treated especially, and will not flare up if ignited, e.g., non-flam flannelette. Even these, however, must be soaked in a solution of alum after being washed.

Scalds and burns produce an alarming amount of shock and prostration, especially if the surface involved be large. They are far more dangerous on the trunk than on the limbs. The bigger a burn or scald, even though it be one of slight degree, the more dangerous it is. Whilst waiting for a doctor, do not uncover, but immerse, the part—or if the body has been burnt, the whole child up to the neck—in a bath of warm water in which has been dissolved a cupful of washing soda, and, if at hand, a cupful of boracic acid crystals. Keep up the temperature of the bath by adding a little more hot soda-water as necessary. Undress, or rather cut away the clothes under the water—leaving any parts of it that stick. Give a little brandy.

The soda-water lulls the pain, and the even warmth revives the child. If no doctor can be obtained, when it is quieter and less frightened lift the child carefully from the bath, dry the parts not burnt, and apply to all others vaseline and eucalyptus oil, or vaseline and boracic ointment

spread on strips of lint or linen, cover with a layer of cotton-wool, and bandage it on lightly. Put the child to bed in warm blankets and keep very quiet.

In the case of slight scalds or scorches, a mixture of equal parts of collodion and castor oil, well mixed together, and applied with a soft paint brush, will allay the pain at once.

The course that a bad burn takes may be divided into three stages—(1) *Shock*: this usually lasts one or two days, and is followed by (2) *Inflammation*, which will last about ten days, and be concluded by (3) the stage of *Exhaustion*. During any of these three stages the child may die. Burns and scalds on the chest are peculiarly fatal in young children, as the period of shock is very marked, and inflammation of the lungs is very apt to set in.

At first a burn or scald, unless a slight one, will require dressing every day. All should be got ready, and the lint spread, before the part be uncovered, so that the wound may be exposed to the air as little as possible. In using lint, the smooth and not the rough side should be placed next the skin, or it will stick to the wound and cause needless pain. Blisters require opening about the second or third day. The less often a burn has to be dressed, the quicker it will get well; but then it *must* be kept clean. To know when to dress a burn, and when to let it alone, requires experience.

After the first few days, when changing the dressing, the wound may be cleansed with warm boracic lotion. Do not dab the wound, but gently squeeze a swab of cotton-wool full of the lotion so that a stream trickles over the part, or if a limb is affected, insert it gently into a bath of warm weak boracic lotion, and take off the old dressing under the water.

The pain of a burn is very great, and the dressings will be a great trial to the mother; but the more that antiseptics are employed, the less will be the smell, and the less often will the wound require touching. For this reason Carron oil, which is a mixture of olive oil and lime-water, is not to be recommended. The antiseptics usually employed are preparations of eucalyptus and Sanitas oils, boracic acid, and picric acid.

The general health of the child will require looking after, and convalescence is always very slow.

Burns and scalds always look their best soon after their infliction, and what appears trivial at first is apt about the fourth or fifth day to look more serious. If the skin be burnt through its entire thickness, a scar must ensue; if the whole depth of the skin be not destroyed, there will be no scar. Deep burns, even though small in extent, tend, when healing, to contract and produce deformity, splints being often necessary.

If a child has tried to drink from the spout of a boiling kettle, give olive oil in teaspoonful doses frequently, and send for the doctor, meanwhile putting hot compresses to the throat, and set a bronchitis kettle going, near to the child.

BRUISES, CUTS, AND SPRAINS.

Bruises.—A mother is sometimes unnecessarily alarmed by the sight of a lump on her new-born baby's head. It has formed from pressure during birth, and will probably get all right in a few days. The same cause may in some cases produce paralysis of one side of the face, which will almost certainly pass off after a time.

A child, when beginning to walk, is sure to get a good many tumbles, and probably not a few bruises. A common place for a bruise is the forehead, caused, usually, by the child coming down on something hard, e.g., the corner of a sofa or chair. A tender swelling appears, gradually increasing in size; later on it turns blue, then green and yellow, and finally disappears. If the child seem in pain, put on a little spirit lotion of eau de Cologne, and a plentiful supply of grease helps to lessen the discoloration.

Concussion.—The skull of a child being very thin, as before stated, a severe blow on the head should never be lightly regarded. Even though there be no wound or bruise externally, yet the brain may have sustained a shock or concussion. In severe concussion, the child is rendered quite insensible, the breathing is short and quick, and the skin cold. As the effects pass off, the child gets warmer, gradually regains consciousness, and is probably sick. In unfavourable cases, inflammation of the brain may set in, the vomiting may persist, and the case terminate fatally.

In a case of concussion, even if slight, put the child to bed, darken the room, and keep everything quiet. Feed very lightly, and, if necessary, give a little castor oil. Quiet and sleep are what the child wants. It is impossible to predict with certainty how such a case may terminate, and a doctor should always be called in.

Cuts.—Children often wound themselves with knives, scissors, etc.; as a rule, a small piece of lint applied to the wound, and kept on until it heals, will set all right. If it results from some out-of-door accident, great care is needed to cleanse from all grit or earth, and the wound should be soaked for a short time in Toxol or other antiseptic lotion (see p. 144). In the case of deeper wounds, where the bleeding will not stop, put on a piece of lint, and bind up very tightly with a long strip of rag used as a bandage, and the bleeding will probably not recur. The bandage should be loosened in a few hours, or the part may mortify from the pressure employed.

Sprains usually occur from carelessly lifting a child, or from rough play. The joint may be twisted or strained, becoming swollen and painful. With rest and warm compresses or evaporating lotion (see p. 144), it usually soon recovers.

DISLOCATIONS AND FRACTURES.

Dislocations are rare in childhood, and, in such cases, there is always deformity of the joint present. While waiting for the doctor, immerse or bathe the joint in very hot water.

It is not a very uncommon thing for a child to be born with one, or even both hips out of joint. The mother may not detect anything wrong with the child at first, but when walking should begin, something unusual is generally noticed. If the dislocation be single, the one leg will be shorter than the other; if double, the child will waddle like a duck. Some improvement can be effected by operation, and appropriate boots or instruments will help to a great extent.

Fractures.—The commonest fractures which happen to infants are those of the thigh, arm, and collar bones. If the bone be completely broken through, the evidences of the break are generally pretty clear. The child screams with pain on the slightest attempt to move the part, and



FIG. 24.—Green-stick Fracture.
From Warwick & Tunstall's "First-Aid" Text-book.
(9th Edition.)

the broken ends of the bone stick up, forming a lump. Very often, however, the bone is not broken quite through, but is partly bent and partly broken, producing what is called a 'green-stick' fracture (Fig. 24).

'Green-stick' Fracture is very common in children, because

their bones contain a large amount of fibrous tissue in proportion to the earthy matter, and are thus able to bend without snapping. Fractures in infants generally do very well if the parts be put up in a suitable apparatus and are kept at rest. New bone is thrown out between and round the two ends. This forms a lump, which will gradually disappear as the new bone hardens.

SUFFOCATION.

This accident is not so rare as many think, and usually arises from the mother taking the child to bed with her. It is a common enough thing for a mother to drop off to sleep whilst baby is still at the breast—how probable, then, that she should turn over on the child, and thus suffocate it. There can hardly be anything more heartrending than the feelings of a mother who, on waking, finds her infant dead by her side.

The accident may happen in another way. The infant may be snugly wrapped up in a shawl, and, whilst asleep, partially turn over, burying its face in the wrap: not having the sense to turn back again, it is suffocated.

In cases of sudden spasm of the air passage, the child may literally die for want of breath, but this is not frequent. Young infants should never be left alone lying on their backs. If unexpectedly sick they may be suffocated.

SWALLOWING FOREIGN SUBSTANCES.

At a certain age, everything that a child can get hold of it puts into its mouth, so that it is a common thing for a child to swallow buttons, coins, small toys, etc. If the substance swallowed be large, e.g., a crust of

bread, it will stick in the throat, and the child will get red in the face, put up its hands to its mouth, and try to cough. The mother should at once put her finger down the child's throat and try to hook out the offender. If this does not succeed, and the child seems on the verge of suffocation, catch hold of it by its feet, hold it with its head downwards, and give it a smart smack on the back.

If a foreign body be swallowed, and gets safely into the stomach, the best thing is to do—nothing. Do not make the child sick ; and, above all, do not give castor oil or any purgative medicine ; the offending body will be passed in due time without any further trouble. In older children, porridge and bread and milk form the best diet, so that a mass may result, in the midst of which the substance may subsequently be passed without any injury to the intestine. By giving purgatives the delicate mucous membrane of the stomach and bowels will be irritated by the hard offending substance being rapidly forced along against it.

FOREIGN BODIES IN EARS OR NOSE.

Small bodies, e.g., peas, beads, or buttons, easily find their way into a child's ear or nose. If the substance be far in, never attempt to extract it ; the child will almost certainly struggle, and serious results may then ensue. Take the child at once to a doctor, who will, if necessary, put it under chloroform and extract the article without any risk or damage. A foreign substance left in the ear will produce permanent deafness. Ill-advised, bungling attempts to dislodge the offender may set up fatal inflammation of the brain. If an insect has crept into the ear, it will float out if salad oil is gently poured in.

POISONING.

This is not a common accident in childhood. Many toys, especially those covered with red, green, or white paint, are poisonous if sucked ; so are lucifer matches, from the phosphorus they contain. Should a case occur, make the child sick, and send for a doctor.

A chronic form of arsenic poisoning may occur from the wall paper of the room containing arsenic, and a form of lead poisoning from water impregnated with that metal.

DROWNING.

Small children just able to toddle have been known to fall head first into tubs or baths of water, and not being able to scream out, have been discovered apparently dead.

Vigorous measures must be immediately taken by *the one on the spot*. Shouts will bring assistance, when the doctor must be sent for, and hot blankets brought, but the main treatment must be undertaken without wasting a single moment.

1. Hold the child up by the feet to let all water run out, and clear out the nostrils and mouth.

2. Lay it on a table face downwards, and to one side. Place the hands

either side of the loins, thumbs towards the backbone, and press downwards, thus driving the air out of the chest. Relax the pressure suddenly, but do not remove the hands. Repeat these movements fifteen times a minute. Have the limbs and body vigorously rubbed and wet clothes pulled off, but do not relax the attempt to restore breathing. Hope must not be abandoned for two hours, and artificial respiration must be continued for some little time after natural breathing has begun.

BITES OR SCRATCHES.

These may occur either by dog or cat, and are apt to cause unnecessary alarm. Should the animal appear to be in its usual health, and have snapped because teased or trodden on, no fear need be felt. The wound should be thoroughly washed with carbolic acid lotion, 1 in 40, and dressed with a piece of lint soaked in the same, and covered with a piece of gutta-percha tissue.

There have been no cases of hydrophobia in England for some time, owing to the stringent regulations as to imported dogs; but in foreign countries, should the animal have been morose and off its food for a few days, it should be killed and its body sent to the authorities, who will examine it, and in a few days inform the sender whether it had rabies, i.e., hydrophobia. Should this be suspected, or the dog be a stray one, the bite should, immediately after infliction, be strongly sucked, then thoroughly cleaned with a strong solution of carbolic (one part in twenty), and the child be at once taken to a doctor. The immediate sucking to prevent the poison getting into the circulation is most important. If it be proved that the animal had rabies, the doctor will probably recommend treatment by inoculation.

CHAPTER XII.

BABY'S ILLNESSES.

Illness—Bronchitis—Inflammation of the Lungs—Pleurisy—Fever—Baths—Wet Pack—Chicken-pox—Measles—German Measles—Scarlet Fever or Scarlatina—Small-pox—Typhoid Fever—Whooping-cough—Diphtheria—Croup—Laryngismus Stridulus—Rickets—Skin Affections—Red Gum—Sweat Rash—Eczema—Nettle Rash—Boils—Ringworm—The Itch—Lice—Worms—Tape Worms—Round Worms—Thread Worms—Dysentery—Intussusception—Jaundice—Scurvy—Scrofula, Tuberculosis, or Consumption—Hip Disease—Ophthalmia—Granular Lids—Inflammation of Eyelashes—Ulcer of Cornea—Squint—Otitis—Convulsions—Infantile Paralysis—Rheumatism.

IT is not a very difficult thing to tell whether a child be ill or not. The loss of appetite, dry skin, and languor are quickly detected by the watchful mother or nurse, and though, to a casual observer, the child may for a few moments brighten up and appear quite well, the trained eye is not so easily deceived. If a child be very ill, it is always a good sign when it sheds tears ; such cases usually recover.

It will be well to consider a little in detail some of the commonest illnesses to which a baby is liable. The following remarks are in no way meant to supersede the doctor, but are given so that the mother or nurse may understand in some little measure the nature of the complaint, what course it is likely to take, what are the chief dangers to be feared, and the line of treatment which will probably be adopted.

BRONCHITIS.

By bronchitis is meant an inflammation of the air-tubes of the lungs. In certain states of the weather bronchitis may occur in the form of a regular epidemic : cold, wet, and fog are especially conducive to this disease.

Bronchitis is very liable to set in under the following conditions :—(1) In weak or rickety children ; (2) As a consequence of an influenza cold ; (3) During attacks of measles and whooping-cough.

It is always a serious complaint in infants. It may begin with an ordinary feverish cold, which gradually spreads downward until it reaches the bronchial mucous membrane. There is always more or less fever, the breathing is quick and short, and at the same time laboured, so that the nostrils dilate with each breath ; the cough is very troublesome, and usually continues during sleep. There is much restlessness and tossing before the child can find an easy position. The face is often flushed and covered with perspiration. There is a loss of appetite, and oftentimes sickness. If the child be at the breast, there will be inability to suck properly, on account of the want of breath. Infants rarely bring up the

phlegm or mucus which is secreted in bronchitis in the form of expectoration, as grown-up people do, but cough it up into the mouth and then swallow it.

On applying the ear to the back of the chest, wheezing or rattling can generally be heard all over it.

In mild cases of bronchitis, where the larger air-tubes are affected, the cough is usually louder, and plenty of air enters the lungs, so that the child, though short of breath, does not pant, turn blue, or dilate its nostrils. The rattling in these cases is louder.

If a child lie quiet, with rapid breathing, blue lips, and a constant little muffled cough, it is very seriously ill indeed.

Good Nursing is everything in bad cases of bronchitis. The child should be put into a good-sized room with a fire; it must be remembered that the little one wants plenty of fresh air, though at the same time it must be warm air. To put the patient into a tiny little bedroom with a roasting fire, is often to take away its only chance. A flannel gown with long sleeves should be worn, as the child is sure to be restless.

The patient may often be quieted by taking him out of bed and nursing him by the fire for a while. A change of position will often afford relief, e.g., turning on to one side, or bolstering up with pillows.

If the child require washing, and is able to bear it, it should be done in front of a fire, with the bath surrounded by a screen. Immerse the child up to the neck in water at 104° , keep it there for three minutes, take it from the bath, envelop it at once in a warm blanket, and dry under the latter, so that there is no exposure to the air. Next put on the child's garments, wrap it in a warm dry blanket, and put it to bed with the blanket still around it.

If the cough be tight and dry, a bronchitis kettle, with eucalyptus or pinol, put on the fire for a few hours, will often prove of service; it will moisten the air and loosen the cough.

If the cough be loose, a kettle is not called for, and may do harm. To keep a child in an atmosphere of hot steam for several days together is certainly a great mistake. Should the secretion into the bronchial tubes be abundant, and the child seem almost choked with it, it is a good plan to induce vomiting, which will clear off the phlegm and greatly relieve the symptoms. The best emetic is a teaspoonful of ipecacuanha wine.

Poultices are much less used than formerly, though sometimes a jacket poultice made of linseed, with a little mustard in it, is ordered at the beginning of the illness, to be replaced in an hour or so by a hot cotton-wool jacket. Antiphlogistine is now often used, and can be left on for some time. Feeding during the attack must be reduced, except as regards water, which may be given freely. Convalescence is often very protracted, and raw meat juice, plasmon, or cod-liver oil may be given with advantage. Even when apparently quite recovered, the child should not be taken out of doors until the doctor's sanction is obtained, as a relapse is very common.

A child that has once had bronchitis is rather liable to have it again.

In order to prevent a recurrence of the disorder, the child must be braced up, and not coddled. Sunshine, pure air by day and night, warm but not heavy clothing, and nourishing food—milk, cream, eggs, etc.—will render him less susceptible. Damp cold—not dry cold—is most to be dreaded, and for town children some weeks in a dry, sunny, seaside place during the foggy season will often prevent an attack for the whole winter.

INFLAMMATION OF THE LUNGS.

This disease by itself is not a very common one among young children, being almost always accompanied by bronchitis, constituting the disorder known as broncho-pneumonia.

In young infants, especially if they be rickety, broncho-pneumonia is very fatal. The treatment is the same as that for bronchitis. Warm, fresh air is required ; and to allow several sympathizing friends in to help, and to keep up the warmth of the room by burning gas, is but to deprive the child of the great thing needful, viz., oxygen.

PLEURISY.

This disease consists of an inflammation of the pleura, or covering of the lungs, and, unlike bronchitis, is nearly always confined to one side. After the inflammation has subsided, fluid is very apt to be poured out between the lung and its covering. If this fluid increases to any extent, it will so press on the lung that the child will have great difficulty in breathing, and, unless something be done, will be suffocated. In such cases the doctor will draw off the fluid by sucking it through a hollow needle with a pump.

Sometimes, instead of the fluid being clear, it will be thick, like cream ; then an opening will probably have to be made between the ribs, and a drainage tube inserted to allow the fluid to slowly drain away. Usually cases of pleurisy do very well. The operation is absolutely necessary ; it is the best thing to be done, and will in all probability result in a perfect cure.

In all cases of chest disease the child should not be allowed to talk, but be kept as quiet as possible.

FEVER.

Every rise of temperature of the body which reaches a certain height, and lasts a certain time, is a fever. The simple feverish attacks which are so common in young children have been described elsewhere ; we now come to the *special* fevers, each of which is caused by its own special poison.

Some fevers are *infectious*, i.e. ; their poison may be carried from one person to another. Strictly speaking the word 'contagious' means that the disease is spread from one person to another by actual contact, while the word 'infectious' means that it is spread without actual contact with the diseased person ; but the terms are now often used interchangeably.

Whilst a child is feverish, it is not only useless, but injurious, to press it to take solid food. All it wants is to be left quiet, and to be supplied with enough fluid to allay its thirst.

In cases in which the rash comes out very imperfectly, the child may become very ill. A *hot bath* is here often very beneficial. The bath should be put in front of the fire, and the child be very slowly let down into it. After being in about five minutes it should be taken out, wrapped in a warm blanket, and put straight to bed without being dried. The temperature of the bath should be 106° . A bath thermometer should always be used.

When a *cold bath* is ordered in cases of fever, the child is put into the water at a temperature of about 95° , and cold water, or even lumps of ice, are added afterwards, till the temperature drops to 60° . Great caution is required whenever baths are used in cases of fever; the child is sure to be very weak, and dangerous collapse may set in. Brandy should always be at hand in case of necessity. The temperature of a child having a cold bath must be carefully watched, and the doctor or a trained nurse is always present during its administration.

In some cases of restlessness and want of sleep, a *wet pack* is very useful. The bed is first protected by a mackintosh, with a blanket placed over it. A sheet is then wrung out of hot or warm water, as the case may be, and the child is enveloped in it, with the exception of its head, and is then placed on the bed, the lower blanket being tucked closely over, and two others laid above. The duration of a wet pack is from half an hour to three hours. Besides quieting the child and inducing sleep, a wet pack will bring down the temperature and so reduce fever.

THE INFECTIOUS FEVERS.

Those infectious diseases which are characterized by a rash, are known by the name of the '*exanthemata*.' The word exanthem simply means a skin eruption, but is now used to denote the rashes or eruptions which accompany the infectious fevers. The most important exanthemata are chicken-pox, measles, German measles, scarlet fever, small-pox, and typhoid fever.

All the exanthemata are more or less contagious; they all have a period of incubation, i.e., there is a period during which the patient has the

DISEASE	INCUBATION PERIOD	PERIOD OF INFECTION
Chicken-pox - -	14 days	3 weeks
Measles - - -	12 "	4 "
German Measles - -	18 "	3 "
Scarlet Fever - -	2 to 7 days	6 to 8 weeks
Whooping-cough - -	10 to 14 "	6 to 8 "
Mumps - - -	21 days	3 weeks

poison in his system, although it has not shown itself; they all possess a rash; and, lastly, they are all specific, i.e., each is produced by a poison peculiar to itself. It may be useful to give a table of the incubation

THE ERUPTIVE FEVERS.



FIG. 25.—CHICKEN-POX. Often the marks are closer together as in small-pox, with which the eruption may be confused, as well as with measles.

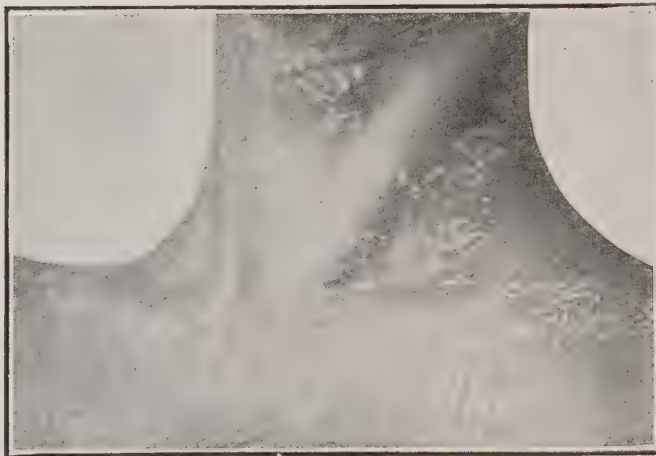


FIG. 26.—SCARLET FEVER, Peeling, or desquamation stage. In infants and small children the peeling is rarely so well marked as in this case.

THE ERUPTIVE FEVERS.



FIG. 27.—MEASLES; second day of rash. The appearance often resembles chicken-pox or small-pox; but the features have a characteristic bloated appearance.



FIG. 28.—SMALL-POX; forty-eight hours after first appearance. The onset of this truly formidable complaint may be easily mistaken for chicken-pox or measles.

periods of the infectious diseases, as, if after exposure to infection a child does not develop the disease by the time mentioned, it will not do so.

It might be thought, when reading the description of the rash accompanying each disease, that its recognition would be easy ; but in point of fact it is often extremely difficult, especially in the early stages. This is indicated in the illustrations given, and will show the necessity for medical advice in every case of sudden skin eruption.

Chicken-pox, sometimes called glass-pox, is usually a very mild disorder. The child becomes a little out of sorts and feverish, and in about twenty-four hours is covered with a rash (*Fig. 25*). This appears, at first, in the form of small red, raised spots, which during the day become filled with a clear watery fluid. The spots do not come out all at once, but in crops ; they are usually specially abundant on the face and back, and about the head : they increase in size, their contents become milky, and they then either burst or dry up, forming small scabs which, at about the end of a week, fall off, leaving red stains upon the skin, which slowly disappear. In some cases, especially if irritated, a spot may leave a scar.

The child will probably require no medicine at all, but must be kept indoors whilst it has the rash, and be prevented from scratching the spots, especially those on the face. The bowels should be regulated if necessary. The period of infection lasts about a fortnight, but is not over until every scab has fallen off.

Measles is very infectious, even before the appearance of the rash (*Fig. 27*), so that though a child may be separated from his companions on its first appearance, the others are almost certain to contract the disease.

At first the child becomes dull, heavy, and feverish, and appears utterly miserable. Sneezing and running at the eyes and nose set in, and usually a hacking dry cough makes its appearance. In young children there may be convulsions. On the fourth day of illness the rash comes out, first on the face and behind the ears, and then spreading to the arms, stomach, and legs. The mucous membrane of the mouth and throat are also often affected, so that the child will complain of a sore throat. The rash first appears in the form of small red pimples, which quickly increase in size and then run together, forming irregular blotches. Whilst the eruption is at its height, the face appears bloated and swollen, and the hands tight and bursting. At this time it is quite common for the temperature to be about 105° , and accompanied by delirium, but as soon as the rash begins to fade, i.e., about the sixth or seventh day of the disease, the fever suddenly drops and the child becomes convalescent. The eruption fades in the same order that it appeared.

While the rash is out the child must be kept strictly in bed, unless indeed it be very young, when it may be nursed. Great care must be taken lest it catch cold, and for this reason it is best to let it wear a flannel nightgown with long sleeves.

The most troublesome part of the complaint is usually the cough. If the throat be sore, give thick barley-water, or glycerin pastilles in children

over two years. During the fever stage the child will probably suffer from inflamed eyes ; they should be bathed with warm water, and the room kept darkened. About the twelfth day the skin often scales in little flakes. In cases in which the rash does not come out well, the child may become very ill and convulsions set in ; a hot bath is then called for. Diarrhœa should be at once reported to the doctor.

Some epidemics of measles seem to take a malignant form ; but as a rule, with care, children do well. They should, however, be carefully protected from possible infection until at least six years old ; after this time they are less liable to have it severely.

The period of infection lasts a month from the commencement of the attack. Of course all the usual rules of disinfection must be carried out before the child is pronounced clean.

If the fever keep up, and the child be ill after the rash have disappeared, some dangerous complication must be feared. The commonest are bronchitis, inflammation of the lungs, or consumption, and inflammation of the eyes or ears.

It must be remembered that after an attack of measles, or any of these infectious fevers, the child is predisposed to infection by various germs, especially the tubercle bacillus, and it should be built up by a change to sea air and a period of extra feeding, especially in protein and fat (see p. 28).

German Measles is a disease quite distinct from ordinary measles, and an attack of the one will not afford any protection from the other. As a rule the disease is milder than true measles. The rash appears on the second day of the illness, and is usually very irritable ; the glands down the side of the neck are generally enlarged and somewhat painful ; cough is usually absent ; convalescence is rapid, and is sometimes accompanied by peeling.

Scarlet Fever or Scarlatina.—Vomiting or convulsions may be the first symptoms. The throat is almost always affected, being very red and swollen ; the glands in the neck often swell and become tender, and there is generally headache. The skin feels very hot and burning, and the rash comes out on the second day. The eruption shows itself at first as small red spots, which quickly spread until the whole skin presents a scarlet appearance, with the original spots showing through, so that the child looks like a boiled lobster sprinkled with cayenne pepper. There is no disease so unequal in its attacks as scarlet fever ; young children do very well, but are not often attacked.

After the rash has reached its height the fever slowly abates, and in a week should have entirely disappeared. Peeling of the skin (*Fig. 26*) generally begins about the eighth day, the size of the flakes depending upon the thickness of the skin. It is often not completed under six weeks from its commencement. Infection is very liable to hang about in the clothes of the patient, or in the paper on the walls of the room, and is at its height during the peeling stage, so that the child must be kept strictly isolated until that be quite over. In a mild case the child may appear

almost well at the end of three weeks, but any discharge continuing from nose, ears, or throat is highly infectious.

The chief complications are :—

1. *Inflammation of the Kidneys and Dropsy*.—This usually takes place during the peeling stage, and may have been caused by a chill.

2. *Rheumatism*.—This is dangerous on account of the damage that may be done to the heart.

3. *Inflammation of the Eye or Ear*.

Like typhoid fever, scarlet fever may be spread by means of contaminated milk, and this is an additional reason why all milk should be boiled, so that any germs which might be present may be destroyed.

Small-pox.—This disease (*Fig. 28*) is practically unknown in infants that have been efficiently vaccinated. The rash appears on the third day, and the eyes are specially liable to suffer.

The younger the child, the more likely is the disease to prove fatal. During an epidemic of small-pox infants should be vaccinated when a few days old.

Typhoid Fever is rare in infants. It is characterized by diarrhœa and fever. A few spots generally make their appearance on the abdomen about the tenth day of illness. No solid food of *any description* should be given, as the fever is one in which inflammation of the bowels is always present, and any irritation to them in the way of solid food or fruit may cause sudden death.

Whooping-cough.—This disease is very contagious. It begins with an ordinary cough, which may last some weeks before the characteristic ‘whoop’ makes its appearance. The infection of the disease lasts about six weeks, but the risk of infection cannot be said to be positively over until the child quite ceases whooping. In bad cases the fits of coughing will come on every half-hour, or even oftener, and are frequently accompanied by vomiting. Owing to the violence of the cough, bleeding may occur from the nose, or, more rarely, from the ears, and hæmorrhage beneath the mucous membrane of the eyes is very common. If the child have any bronchitis, bed is the best place for it, and a steam kettle with carbolic lotion may be used in the room for periods of an hour at a time, several times a day.

In ordinary cases it is best to have a day and a night room. Early in the day, burn sulphur or formalin in the night room, leave the windows open all the afternoon, have a fire, and let the child sleep there. In this way the attack will probably be much shortened. A lamp burning cresolene (to be had of any chemist) may be used in the day room.

If the chest be very stuffy, it may be well rubbed, in front of the fire, with some embrocation. If the child vomit during the fit of coughing, light food, e.g., citrated milk or raw beef juice, should be given directly after the attack. The duration of the disease is very variable. The chief dangers to be feared are bronchitis, inflammation of the lungs, and consumption. If the patient be rickety, the dangers of whooping-cough are greatly increased. When the disease passes into a chronic stage, i.e.,

after about three or four weeks, in suitable weather the child should be out as much as possible, and later on a change to the seaside (if it can be taken there without infecting public conveyances) will often effect wonders.

The child while still whooping should not be allowed to go near other children ; and it should be remembered that the contagion can be transmitted by the mother or nurse.

Diphtheria.—This is a contagious disease characterized by the deposit of a whitish-grey membrane, which usually appears in the throat. There is fever, loss of appetite, lassitude, and a difficulty in swallowing. Sometimes, however, these symptoms are so slight as not to be noticed at all. On examining the throat the diphtheritic membrane is usually plainly to be seen on the tonsils, uvula, or adjacent parts. Vomiting is often present. Hoarseness or loss of voice points to a spread of the membrane to the windpipe : a copious discharge from the nose may indicate a spread of the disease to that organ. Lumps, due to enlarged glands, usually appear on each side of the jaw.

A doctor should always be sent for *at once*. A case of diphtheria, however mild it may appear to be at first, may prove fatal in the long run. When the child is first taken ill, it is not always possible to say whether the disease will turn out to be diphtheria or not, but it is best to isolate the patient and put him to bed at once, and put a trained nurse in charge. The doctor will take a little of the discharge from the throat and examine it for a positive diagnosis.

During the first few days the child will probably have great difficulty in swallowing, and will keep its mouth open, allowing the saliva to trickle on to the pillow. The great thing is to keep the strength up as much as possible. Stimulants will probably be necessary, and food in the form of milk, eggs, soups, beef-tea, etc., given in small quantities regularly. In bad cases the child must be kept perfectly quiet, and not even allowed to sit up in bed to take its food. The three chief dangers are :—

1. *Exhaustion.*—In some cases, though the throat itself goes on well, the complexion will take on a waxy hue, the pulse become slower and slower, and the child will gradually pass away. Sometimes, when the child has been allowed to make some sudden movement, or has suddenly sat up in bed, it has dropped back dead. Vomiting occurring after the first few days is a very bad sign, and quickly leads to exhaustion.

2. *Suffocation.*—If the membrane spread to the windpipe, the breathing will become laboured, the nostrils will dilate, and the ribs fall in at each inspiration, and unless something is done the child will die suffocated. In suitable cases, opening the windpipe affords the only hope. The operation itself is not a dangerous one, and the longer it is deferred the less likely is it to prove successful.

3. *Paralysis.*—If, when the child swallows, some of the fluid returns through its nose, some paralysis of the soft palate may be suspected. Squint, or weakness of a limb, are also signs of paralysis. Sometimes the paralysis spreads until the child cannot move at all, and it may prove fatal ; but, as a rule, it is quite recovered from. No case is hopeless.

All orders from the doctor should be carefully carried out. Sometimes the throat has to be sprayed or painted every two or three hours, and the mother should be very careful, while doing so, that the child do not spit or cough in her face ; indeed, it is best to wear a small mask over the face for protection. Nearly all cases are now treated by the injection of anti-diphtheritic serum, which has very greatly reduced the mortality of this terrible disease.

Bad drains and contaminated milk are the two great causes of diphtheria, and should both be carefully considered in trying to discover the origin of the disease.

It is astonishing how long the infection lasts, and careful disinfection must be carried out.

The diseases which are most likely to be confounded with diphtheria are tonsillitis and scarlet fever.

CROUP AND CHILD-CROWING.

Croup.—The common history of an attack of croup is as follows : The child, apparently in the midst of good health, suddenly wakes up in the early hours of the morning, gasping for breath. Its face is blue, and covered with a cold perspiration, and the breathing is slow, laboured, and noisy. The voice is reduced to a whisper, and there is an occasional harsh cough. After a time, varying from half an hour to an hour, the symptoms slowly subside, and the child falls asleep, to wake in the morning quite well, with the exception of a slight hoarseness and an occasional cough. The child is very liable to get a recurrence on the following night, about the same hour. Although very alarming, these attacks are very seldom fatal. The child, for the time, seems on the eve of suffocation, but, as a matter of fact, there is not very much danger. The quickest way to cut short an attack is to make the child vomit. For this purpose give a teaspoonful of ipecacuanha wine, and repeat it if necessary. A hot bath, with a tablespoonful of mustard in it, will also prove beneficial.

The commonest exciting factor in this disease seems to be exposure to damp cold.

Laryngismus Stridulus, or Child-crowing.—This disease is characterized by the child being suddenly seized with a spasm of its respiration. It stops breathing, turns blue, clenches its hands, and then suddenly draws in its breath, with a low crow, and is well again. In those who are subject to this complaint, any sudden shock may produce it, e.g., tossing the child up in the air, or giving it a smack. The voice remains unaffected. The attacks are very frightening, and are sometimes, though rarely, fatal. Should a seizure seem to last longer than usual, dash cold water in the child's face, or give it sharp smacks on the back. It is a disease that the patients grow out of as they get older. A doctor will probably order bromide of ammonium, which will assist in the recovery.

The general treatment is that of rickets ; nearly all children subject to child-crowing are, at the same time, rickety. Feed the child properly, give it plenty of air and sunlight, and probably the fits will soon cease entirely.

RICKETS.

This common disease among children may almost be defined as 'wry bones,' for, though the disease affects the whole body, it is not usually recognized by mothers until the changes in the bones are noticeable. The ends of the long bones enlarge, and produce swellings at the ankles and wrists. Little lumps also often form where the ribs join the breast-bone in front, and the chest becomes triangular shaped, like that of a pigeon. As soon as any pressure is brought to bear upon the bones they bend; e.g., as soon as the child begins to walk, and the weight of the body has to be borne by the legs, they bend, producing what is called 'bow-legs.' If the child sits up much the back will bend. The bones being so soft are very liable to fracture (see 'green-stick' fracture, p. 106). The head enlarges, and the bones of the skull do not properly close. The teeth are late in coming. Rickets is not often seen before ten months, but from that age to two years it is a very common disease.

One of the earliest symptoms of rickets is profuse *sweating* of the head and neck, especially during sleep, and the child will often throw off the bedclothes and lie naked, even in winter. Head rolling or banging is sometimes present. The abdomen gets big and protuberant, and the motions are often offensive. Although very likely the child does not seem to lose flesh, it will become flabby and tender all over, and there will be much muscular weakness. If the child have begun to walk, it will become unsteady, and the enlargement and bending of the bones will soon be noticed. A rickety child is very liable to attacks of bronchitis, croup, diarrhoea, etc. It is very important that mothers and nurses should be able to detect the earliest symptoms of rickets. A doctor is often consulted for the croup or bronchitis, which might have been entirely averted if the true cause had been earlier recognized. A cold which a healthy child would throw off in a few days will often develop into bronchitis, and may even end fatally, in a rickety child. The nervous system of rickety children is very easily upset, so that convulsions and child-crawling are common.

Rickets is a *preventable disease*, and ought never to occur in the children of mothers who have read this little book.

To prevent rickets, children must be :—

1. Fed on food suitable to their age and weight.
2. Kept in well-ventilated, dry rooms, free from bad smells.
3. Given plenty of light and sun-baths.
4. Given outdoor exercise every fine day, and indoor exercise every wet day.
5. Given soap-and-water baths at least once a day.

Now these are not impossible rules, except perhaps to a very few, and even then a little ingenuity will often accomplish wonders.

Each rule has been carefully considered in its practical aspect in other parts of this book, and it is hoped that every mother will try to work out and improve upon the various suggestions made.

Supposing, however, that all the five rules have apparently been faithfully carried out, and yet the first symptoms of rickets appear, what is the cause? In all probability the first rule has been unwittingly broken, e.g., in the case of a child with a weak digestion, the milk has been diluted to such an extent that the child has been half starved, although it may have got very fat. The great remedies here will be *raw meat juice* and *cream or cod-liver oil*.

If a child with commencing rickets has reached the age of crawling or walking, its legs must be bound together during the day with a piece of flannel. At night leave the legs loose, so that it may kick about as much as it likes. The only object in having the legs bound is to prevent the child standing or crawling, because it must be remembered that directly weight is put upon the bones, they will bend.

Bad cases of rickets may require splints; but if the child be kept off its feet from the very beginning, and the five rules above given be carefully attended to, it will quickly recover and the bones get strong.

Rickety infants are liable to an acid form of indigestion, and bear starchy foods badly; they should be given eggs, milk, raw meat juice, and cream. Diamalt makes a capital aid to their digestion, and cod-liver oil is generally the only medicine called for. A dessertspoonful of saccharated lime-water should be given twice daily in the milk food. Rickets, although not a fatal disease in itself, may indirectly cause death from bronchitis or diarrhœa.

It is interesting to know that formerly it was found impossible to rear young lions at the Zoological Gardens, as they always succumbed to rickets. Now that raw meat, pounded bones, and cod-liver oil have been added to their diet, the cubs have been brought up without any difficulty.

SKIN AFFECTIONS.

If there be one thing more than another upon which a mother is apt to pride herself, it is the fact that her baby always has such a clear skin. Any skin disease, however slight, thus becomes a source of great annoyance, not only to the child but also to the mother. The skin of a child is very delicate and sensitive, and any chafing or irritation, e.g., the using of a coarse soap, or hard water, will probably bring out a rash.

Nævus, or Mother's Mark, is a very common congenital skin affection, which may occur anywhere, and consists of dilated blood-vessels, which may be either of a bright scarlet or dark purple colour; the blood can generally be pressed out, so that the spot becomes quite pale.

It really exists at birth, though it may not be noticed for some time later. If situated on a part that does not show, it had better be left alone, providing it is not increasing in size. One that has remained unchanged for a long time may suddenly increase in size, and then something will have to be done. Different nævi require different treatment; cures are usually effected by painting them with acids, vaccinating them, and tying them, or, in some cases, cutting them out. Some nævi are especially

adapted for treatment by electricity. A mother should not allow any one who is not a qualified medical man to give any treatment for nævi.

Red Gum.—This rash usually shows itself in infants under a year old, in the form of small, bright, red spots, generally on the face, but often covering the whole chest and body. As a rule the rash is not very irritable, and begins to disappear in a few days. Fresh crops of spots are, however, very apt to come out. The appearance of red gum usually indicates some amount of indigestion and acidity, and is often associated with teething. The best thing is to give half a teaspoonful of fluid magnesia to clear the bowels, and three grains of bicarbonate of soda in a little milk to correct the acidity. The rash may be dusted with starch powder.

Sweat Rash.—Infants who are clothed too warmly, or who suffer from the heat in hot weather, often have a rash consisting of minute water-filled pimples—round the neck, behind the ears, and under the hair on the forehead being favourite situations. Dusting powder should be freely used, and the clothing reduced and re-arranged to allow of freer ventilation. It may be caused by profuse sweating in an over-fed child who is trying to get rid of his superfluous heat.

Eczema.—This eruption attacks infants of all ages. It is often started by germs entering the skin through a minute abrasion, caused by rough treatment during washing and cleansing in the early days of life. It has the appearance of a bright, red, moist surface covered with dried-up discharge in the form of crusts or scabs. The most common parts to be affected are the face and scalp and behind the ears; the groins and insides of the joints are also very liable to be attacked. In some instances a child is one mass of eczema from head to foot. In cases of acute eczema, the irritation is very great, and if allowed, the child will almost tear himself to pieces. The discharge from the sores, if allowed to run over the healthy skin, will irritate it, and spread the disease.

In treatment, the great thing is to find the cause. There may be some error in diet, e.g., bringing up an infant on starch food, which causes irritation of the bowels, indigestion, and irritation of the skin. The simple substitution of boiled water for barley-water, and the omission of any patent food in the bottle, will then often work wonders. Any irritation, e.g., that of friction or rubbing of the part, that set up by lice, or that of teething, may very quickly induce an attack of eczema. Tuberculous children are also very subject to this disease.

All sources of irritation should be removed, and, if necessary, the child must wear cardboard splints tied over the elbows to prevent his scratching his face, while a mask of linen on which the ointment is spread, fastened on the face at night, often hastens the cure. Soap should not be employed for washing the part, but oatmeal water or sweet oil may be used when cleansing is absolutely necessary, though the less it be washed the better. The ordinary soaps contain free soda and potash, and these act very injuriously in eczema. Sea air is bad for eczema, because it contains so much salt. The bowels must be regulated, and the food carefully

attended to. In older children sweets, raw fruit, and sometimes porridge act injuriously ; in fact, both starch and sugar must be sparingly given.

Locally, the places may be gently sponged with a solution of bicarbonate of soda containing oxide of zinc, or a solution known as Startin's paint. Lotions are most useful during the discharging stage of the disease, and ointments during the scaly stage. It is of no use to apply any medication on the top of a lot of scabs. The part should first be well soaked in oil, and the crusts picked off ; if, however, they still adhere, a poultice had better be used. The best ointments are zinc and the white precipitate, both of which should be used diluted with white vaseline.

The general health is of great importance, and cod-liver oil should be given when required.

Eczema is often a very difficult thing to get rid of, and relapses are common. After the child seems quite well again, any little irritation, e.g., the east wind, will very likely bring back the disease as bad as ever.

Nettle Rash or Urticaria.—An acute attack of nettle rash is usually due to some error in diet, the rash appearing as raised white lumps surrounded by a halo of congestion. The irritation is intense, and may be accompanied by diarrhoea and vomiting.

The best treatment is to give a dose of castor oil, and a bath containing two ounces of soda to three gallons of warm water, and after drying, to dust on some oxide of zinc powder. The attack usually lasts two or three days. Sometimes, however, a chronic form attacks children, lasting in some cases months or even years, getting better at times, and then breaking out again as badly as ever. The treatment is most disheartening, but attention must be paid to the bowels and diet. Sulphur, given internally, often does good. The itching may be allayed by a lotion of *Liquor carbonis detergens*, a tablespoonful to a pint of water, dabbed on with a sponge, or by half a teaspoonful of bicarbonate of soda dissolved in a quarter of a pint of elder-flower water with a little glycerin added. Silk clothing next the skin, by day and night, frequently affords relief.

Boils.—Children over one year often suffer from a succession of boils—which indicates a low state of health. A more nourishing diet, tonics, and change to the seaside will often be needed. The part must be protected from pressure, but not be poulticed or have watery dressings under oil silk, or probably more boils will appear. Eucalyptus and vaseline smeared on the skin is useful.

Ringworm.—This complaint is caused, not by a worm, but by a vegetable fungus. It is very contagious, and is spread by children using the same towels and brushes, putting on each other's caps, or by direct contact during play or sleep. The eruption is somewhat irritable, and often causes scratching. At first it appears as a dull red circular patch, often covered with little scales ; this patch slowly increases in size, fading somewhat in the centre as it spreads.

If ringworm attack the head, the hairs in the affected part will break off near the surface of the skin, leaving a bald patch. The hairs do not

drop out by the roots, but snap off, so that a small portion appears above the skin. These broken-off hairs are very characteristic of the disease, and at once distinguish it from patches of mere local baldness.

The treatment must be directed to killing the fungus, which is the real cause of the disease. A patch of ringworm on the arm or leg is very easily cured, but ringworm of the scalp is a most tiresome and vexatious thing ; month after month the mother may diligently persevere in the treatment, and yet the case may remain uncured.

If ringworm attack the scalp, and there be several distinct patches, it will be quicker in the end to have the head completely shaved, and to let the child wear a skull cap. Before applying any remedy, the patch should be cleansed with hot water and soap. An ointment of a drachm of salicylic acid to an ounce of vaseline, thoroughly rubbed in, is often used. Iodine in the form of the liniment, or in the case of young children the tincture, may be painted on. Another good lotion is sulphurous acid, rubbed in with a rag ; its smell is, however, rather objectionable. Stronger remedies may sometimes be required. By far the quickest cure is to have the *x*-ray treatment, which may only require one or two applications. In some cases, the pulling out of diseased hairs by forceps will hasten the cure.

The child must have a separate brush and towel, and of course must be kept away from school until quite well.

It is always difficult, and often indeed impossible, for a mother to know when the disease is really cured, but a doctor can always tell by means of the microscope if there be any fungus still left.

The Itch, or Scabies, is a skin eruption, dependent upon the irritation of an insect, the itch insect, in the skin. The parts mostly affected are the hands, feet, and buttocks. The irritation is always great, and the scratching of the infant is liable to set up eczema. At first the eruption appears as little watery heads, which are soon filled with matter.

The female insects burrow in the skin, whilst the male crawl about the skin and clothes. They are very small, not being as large as a pin's head. The face is never attacked.

The treatment is as follows : give the child a hot bath, using coal-tar soap, and being especially vigorous over the affected parts. Keep the child in the water about a quarter of an hour, so that the skin may become thoroughly softened ; next dry, and well rub in a mixture of a teaspoonful of balsam of Peru to one ounce of vaseline. All the clothes should be baked in the oven. Balsam of Peru is better to use than sulphur, being less irritating. Put the child to bed, and in the morning give a warm bath to get rid of the ointment. Of course the itch is very catching, and the mother and nurse are very liable to take it from the child.

Lice.—These disgusting insects (*Fig. 29*), politely called pediculi by the doctor, cause very great irritation of the part affected. Their favourite point of attack is the head, and, by diligent search, they can be easily discovered when present. The eggs are of an oval shape and are glued on to the hairs. Lice cause eczema, especially that form which is situated

at the back of the neck, and the glands in the neighbourhood are often enlarged.

The best treatment with a child over four years is to put it flat on a table with its head hanging over the edge. Procure from the chemist a pint at least of 1 in 20 carbolie lotion. Put equal parts of this, which is a strong poison, and hot water in a large bowl, and let the back of the head

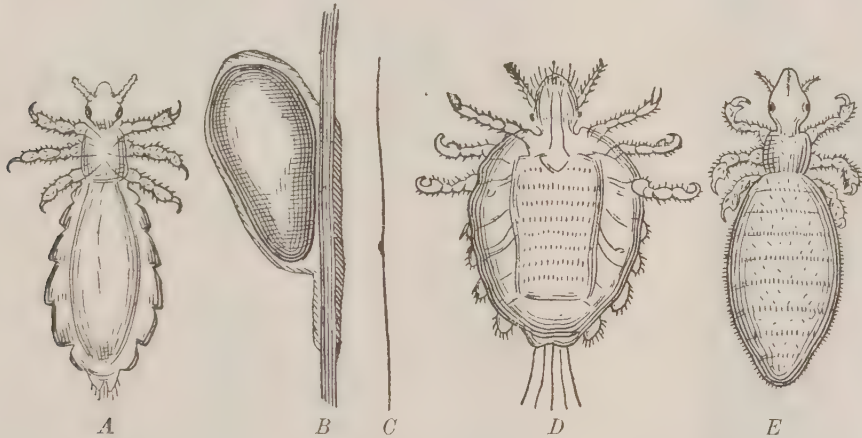


FIG. 29.—Various kinds of Lice (greatly magnified).

(A) Head louse, chiefly found in the scalp. (B) Egg of head louse attached to a hair, magnified, and (C) natural size. (D) Louse found on the hairy parts of the body. (E) Body louse.

and hair soak in it, well swabbing with a piece of wool any parts, e.g., by the ears and lower part of the neck, which are not immersed. Continue for ten minutes at least, then drain the hair slightly, and twist it up in a large towel round the head for an hour. Wash thoroughly with soft soap, and dry. This will kill both pediculi and nits, and a good brushing and fine combing with methylated spirit will remove most of the latter from the hair.

WORMS.

There are three varieties of worms by which a child may be infested : the tape worm, round worm, and thread worm. The symptoms that may be caused by worms are : irritation and consequent scratching at the anus, grinding of the teeth, picking at the nose, disturbance of the bowels, and capricious appetite. In many cases, however, the presence of worms gives rise to no symptoms at all.

Tape Worm.—It is rare for tape worm (*Fig. 30*) to infest infants. By appropriate means they can pretty easily be got rid of. Flat pieces of the worm are passed with the motions of the child. A cure will not take place until the head of the animal be passed.

Round Worms (*Fig. 31*) are several inches long, and have somewhat the appearance of a common earth worm. They vary in number, but are usually single. It is not a very uncommon thing for the child to expel the worm from its mouth by vomiting. The usual treatment is santolin,



FIG. 31. ROUND WORM
(about half natural size).



FIG. 30.—TAPE WORM (*portions only*).

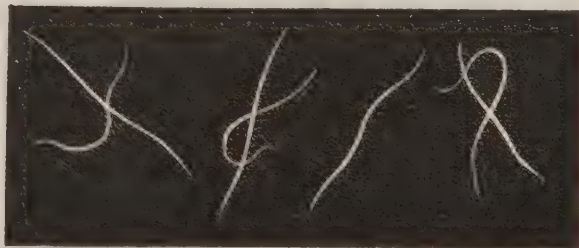


FIG. 32.—THREAD WORMS (*much enlarged*).

given under a doctor's orders : it may be mixed with a little powdered sugar, and given at bedtime. A dose of castor oil is generally given the next morning. In two or three days' time the treatment may have to be repeated.

Thread Worms.—These worms (*Fig. 32*), when present, usually exist in large numbers. They are only about a quarter of an inch long, and inhabit the lower bowel, and often escape from the anus and crawl about in its vicinity. If there be much mucus secreted from the bowel, it seems to afford a convenient resting-place for the worms to breed and multiply.

The best treatment is injections of salt and water into the lower bowel, a teaspoonful to a pint, or an infusion of quassia of the same strength. In young children, not more than three or four ounces of injection should be used at a time. It is well to repeat the operation for a few days, night and morning, at the same time keeping the bowels open. Some doctors, however, will order *santonin* as well.

In all cases of suspected worms the motions should be carefully examined, as it is impossible to arrive at a correct diagnosis unless the worms or their eggs be seen.

DYSENTERY.

Dysenteric diarrhœa is characterized by a discharge of blood and mucus from the bowel. This disease is not, as a rule, due to errors in diet, but to a chill of the bowels, setting up inflammation. Usually there is a good deal of straining and bearing down of the bowel, and at the outset there may be fever and vomiting.

The great preventive of dysentery is the proper protection of the bowels from cold ; for this reason a stomach belt should be worn by day and night (see pp. 11 and 95). The line of treatment is to give the bowels as much rest as possible, and to keep the child warm in bed.

INTUSSUSCEPTION.

If a child pass blood and mucus with great straining, and at the same time have constipation, a doctor should be sent for at once, as the child probably has *intussusception of the bowels*, i.e., one portion of the bowel has slipped into another, like an inverted finger of a glove. Any purgative will make matters much worse, and an early operation is generally required to save life.

JAUNDICE.

It is a very common thing for a child of three days old to become jaundiced and yellow all over, especially if great care was not taken to prevent a chill at birth. It will generally disappear in a week or so. In older children, jaundice is usually due to a cold on the liver, which produces congestion of that organ, and a temporary stoppage of the bile ducts. The urine is of a dark yellow colour, and stains the napkins. The motions are of a pale or white colour, showing an absence of bile. Sickness may be present, and the bowels are generally confined. The stomach should

be kept warm and well covered up, and, unless the weather be warm, the child should be kept strictly indoors until the jaundice has quite disappeared. The disease requires careful management, but need cause no anxiety.

SCURVY.

Scurvy is characterized by tender bones, pain on being moved or touched, swellings on the limbs, hemorrhages under the skin, spongy gums, anaemia, earthy complexion and smell, and great debility, and is generally found in infants fed on patent foods or condensed milk. It is most common between the ages of six and eighteen months, and its occurrence calls for an immediate change to fresh boiled milk, raw meat juice, potato, and fruit juice : but of course medical advice must be sought.

SCROFULA, TUBERCULOSIS, OR CONSUMPTION.

This disease has been called the scourge of England. It is the commonest of all diseases to which childhood is liable, and the rate of mortality from it is extremely high during the first two years.

It is not hereditary, but is caused by a direct infection from without of living tubercle bacilli, which may attack the glands, joints, skin, or internal organs. If the child have inherited or acquired a feeble power of resisting or overcoming the bacillus, it will very likely fall a victim to its ravages.

The bacillus finds access to the tissues in different ways, but it is said that its most frequent entrance is through the air-passages into the blood-supply, from thence being carried to the parts which have the least resisting power at the time. Dust, which may contain dried tubercle bacilli, is therefore to be guarded against in every way. Without going so far as to say that the breath of tuberculous persons contains the bacilli, it is certain that during coughing, singing, loud speaking, or sneezing, the air of the room or surrounding objects may be infected.

A baby should never be nursed or kissed by a tuberculous person, or inhabit the same house, as the younger the child the less able is it to successfully overcome an infection that would be negligible in an adult.

The second most frequent invasion of tubercle bacilli is made by way of the food tract, and as they, as well as many other harmful germs, are frequently present in milk, it should always be boiled when for children's use. Flies as germ carriers must be prevented from alighting on any food.

The resistance or antagonism of the tissues to the tubercle bacillus appears to be less in some families than in others, but it can be greatly increased by careful attention to hygienic details.

The 'open air' treatment is the best preventive known, together with the graduated cold bath to diminish the liability to colds, a frequent precursor of the disease : a well-considered diet containing a high percentage of protein and fat, such as eggs, milk, butter, fresh meat, and cream ; plenty of out door exercise ; thorough ventilation of the rooms, erring on the cool rather than the warm side, and remembering the importance of

pure night air ; sufficient but not excessive clothing ; and all supplemented by country or sea air as often as possible.

It must be remembered, with older children, that the ordinary infectious diseases, especially if they follow one another at short intervals, have a marked tendency to lower the resistance of the tissues to the tubercle bacillus, so that a period of high protein and fat feeding, with a free, open-air life, should be carried out for some little time afterwards. Plasmon, which is tasteless, can be added to the food to increase its protein, a chump chop or piece of grilled rump steak provided for dinner, and an egg, or sardines in oil, or Devonshire cream for tea, extra milk for lunch or supper, and all combined with pleasurable exercise and rest alternately on the sea shore : this is the line of preventive treatment required, and is far better than dosing with medicines, except that, in the winter, cod-liver oil as an emulsion, or in malt, should be given twice a day to thin children, if they can digest it.

Tuberculous Manifestations.—1. *The External Glands.* Those in the neck are the most frequently attacked, an unhealthy mucous membrane of the throat and mouth, e.g., enlarged tonsils, adenoids, and decayed teeth, being sometimes the indirect cause. Such conditions should always be investigated and treated. These glands often require removal, as if allowed to burst they may re-infect the tissues and will leave an ugly scar.

2. *The Joints or Bones.*—Any accident to a joint should be carefully treated, as it forms a very favourite breeding-place for any stray tubercle bacillus that may be carried to it by the blood-stream. The knee, hip, and spine are the most serious situations. To take it in time is important. A child may begin to cry out in its sleep, limp slightly, carry its leg carefully as if it were afraid of a jar to the foot, and perhaps complain of pain in the knee. These symptoms would suggest hip-joint trouble.

In any tuberculous inflammation of a joint, great patience will be required. Complete rest of the joint is indicated, and is carried out in different ways, according to the part affected and the severity of the case. It is important to keep the child happy and contented, and thorough open-air treatment and high feeding are necessary adjuncts to surgical attention.

3. *The Skin.*—When the bacillus attacks the skin, as in lupus, it can fortunately be destroyed *in situ* by means of the Finsen light treatment.

4. *The Internal Organs.*—Tuberculous disease of the covering of the brain (meningitis)—shown by various cerebral symptoms, such as delirium—and of the covering of the intestines (peritonitis)—in which the abdomen is swollen and the child quickly wastes—are manifestations of internal tuberculosis with very young children. The lungs are less frequently affected at this age, unless there has been close association with a person, for example the mother, suffering from phthisis (i.e., consumption or tuberculosis of the lungs). The most common form, however, is enlargement of the abdominal glands due to an invasion of tubercle bacilli through the intestinal walls.

In face of the prevalence of the disease, parents will realize that :—

1. All known sources of tuberculous infection should be avoided.
2. All possible means should be taken to keep a child's resisting power at a high level of efficiency.

After the age of two years, however, a very large percentage of children with tuberculous mischief recover completely. General treatment is largely such as has been indicated, together with specific local treatment by tuberculin or other methods as required.

DISEASES OF THE EYES.

Ophthalmia or Blight is an inflammation of the membrane (conjunctiva) covering the eyeball and lids. *New-born children* are specially liable to this disease, from contamination by the maternal discharges. The white of the eye becomes red and swollen, and the lids are stuck together by a gummy discharge. If allowed to continue untreated, the discharge quickly becomes thick and yellow, and the eyelids swell so much that the child cannot separate them. The discharge is very contagious, and one eye readily infects the other. If unchecked, the inflammation may spread to the deeper parts of the eye, causing partial or even total blindness.

The preventive treatment is mentioned on p. 2. If, unfortunately, any symptoms should arise, the infant should be laid on its side on the knee, with a soap dish under the side of the head, and the eye be well washed with a stream of lotion, first with the lids shut, and then gently separated, using a fresh swab each time it touches any discharge, and this should be repeated every one or two hours. Older children can have the lotion put into the eye with a pipette. The edges of the lids should also be smeared with weak boracic ointment. A doctor must be called in on the first sign of any yellow discharge, and he will probably order an astringent lotion of sulphate of zinc or nitrate of silver.

Older children may contract the disease by direct infection or from infected dust. They must be separated from other children at once, and be vigorously treated from the beginning. In a *chronic form* it is apt to give rise to *granular lids*. Here the constant movement of the lid keeps up irritation, and the affection is difficult to cure. The lids often require turning inside out, and touching with blue-stone daily.

Inflammation of the Roots of the Eyelashes may occur in neglected cases. The edges of the lids become red and irritable, a thick secretion glues them together, scabs form, and the lashes drop out, forming a very unpleasant spectacle. The scabs must be bathed off, and a little dilute yellow oxide of mercury ointment smeared on. Fresh air, great cleanliness, and tonics, with abundance of nourishing food, are the most important points in the chronic ophthalmia of older children.

Ulcer on the Eye.—An ulcer on the front part of the eye or cornea is always accompanied by pain, watering of the eye, and a fear of light. It denotes ill-health or scrofula, and may follow an attack of measles or scarlet fever. The eye generally waters a good deal, and the child will absolutely refuse to let it to be looked at. The general treatment consists

of tonics such as cod-liver oil, steel wine, or malt extract, good food, and plenty of fresh air. The eye should be carefully protected by a shade or veil whilst the child is out-of-doors, but whilst in-doors it is better to slightly darken the room. To keep the child shut up in a dark room from morning till night to mope and fret will prove most disastrous.

The child must be taken to a doctor, who will probably order an atropine lotion to be dropped into the eye twice a day, and perhaps a blister on the temple.

An ulcer on the cornea, even when healed, leaves a little white spot or scar behind it, which, if over the pupil, may interfere with the sight. Neglected cases of corneal ulcer may lead to the destruction of the eyeball.

Squint in quite young infants is often due to inharmonious working of the muscles of the eyeball, but this should disappear in about two months. Should it persist, a doctor must be consulted.

If it is first noticed at about five or six years of age, advice should be sought at once, as spectacles and special eye exercises are needed, or even an operation may be required.

Headaches over the forehead, and blurring of objects, point to a defect in vision, and the child had better be examined at once, or it may be ruining its sight.

THE EAR.

Otitis, or inflammation of the middle ear, is very painful, and reveals itself by bad earache. There will probably be persistent crying, rolling of the head from side to side, fever, loss of appetite, and a tenderness just behind the ear. At this stage, hot fomentations and poultices may give relief. The doctor, who should always be sent for at once, will probably give a purge and perhaps order a leech. Otitis generally goes on to the formation of matter. This matter, being unable to get out, causes great pain, but in time it usually penetrates the drum of the ear, and appears outside as a thick yellow discharge, often smelling very offensively. As soon as the matter appears the pain is generally relieved. The surgeon often opens the abscess before it bursts, and so saves the child a good deal of pain. The ear must now be kept very clean, and gently syringed several times a day with warm boracic lotion, and, after being thoroughly dried with pledgets of absorbent cotton-wool, it is well to gently insert a small piece of dry antiseptic wool until the next syringing.

Otitis is very liable to occur in the course of measles or scarlet fever, or during teething. Discharge from the ear should never be lightly looked upon or neglected. It is very apt to become chronic, and may continue for months or years if left untreated. In spite of all care, deafness may ensue; and not only so, the inflammation may even spread to the brain, and an operation be required.

CONVULSIONS.

These are usually one of the greatest horrors of a young mother. Nothing is more alarming than to see baby, who a few moments ago was

looking the picture of health, suddenly turn blue and rigid, all the muscles twitch and become convulsed, the eyes turn up with a fixed, unconscious stare, and, to all appearance, in a few more seconds all will be over.

The first thing to do is to loosen the child's clothing, so that there may be nothing tight round the neck, and then to open the mouth by forcing the finger between the gums, so as to allow a free passage of air into the chest. In older children, a spoon or tooth-brush may be used instead of the finger. A hot bath may then be given, the head being sponged with cold water at the same time. The usual duration of a fit is about two or three minutes, although it may last much longer. The child may die suffocated during the fit.

The commonest cause of convulsions is an over-loaded stomach; in such cases an emetic is called for. Fits are far more common in rickety children than in the healthy. Constipation or worms also excite an attack. Childish ailments, e.g., measles or scarlet fever, are often ushered in by a fit; in some instances it is the first indication of an attack of inflammation of the brain, or of epilepsy. A doctor will usually be able to determine at once the cause of the fit, and so prevent a recurrence.

The so-called *inward convulsions*, in which a young baby has blueness round the mouth and twitchings of the muscles of the face, with half-closed eyes, must not be confounded with true convulsions, but are due to flatulence, and can easily be relieved by a little soda bicarbonate in water.

INFANTILE PARALYSIS.

This is a form of paralysis which is fairly common in children under four years old. The legs are usually affected, one or both, though more rarely the upper extremities suffer. The disease may begin with a fit or a feverish attack. In some cases, however, the child may go to bed apparently quite well, and in the morning be found to have complete paralysis of one or both legs. The disease is an inflammation of the spinal cord. The causes are usually stated to be exposure to heat or cold, and over-walking. Occasionally it occurs in an epidemic form. The paralyzed part is quite helpless, but its sensation is perfect. After a few days, it is usual for the paralysis to get a little better and for some amount of power to return. Wasting of the affected part sets in, so that it becomes much smaller than the other side: it is also cold and bluish. In bad cases the limb is utterly useless. Much can be done by patience and perseverance.

1. **Clothing.**—Always keep the limb warm, day and night. Make the child wear an extra stocking of thick wool, coming well above the knee.

2. **Rubbing.**—This should be done regularly, night and morning, for a quarter of an hour at a time, care being taken always to rub upwards, i.e., towards the body. But besides actual rubbing, the muscles should be kneaded, squeezed, and shampooed. If the expense of a trained masseuse is prohibitive, it will be well for the mother or nurse to take some lessons in massage, in order to carry out this line of treatment.

3. **Douching.**—This should be effected by pouring a large jug of hot water over the limb, followed by a jug of cold water, after which the limb

should be rubbed dry with a fairly coarse towel, to produce a glow on the skin. Many use Tidman's sea salt in the water.

4. **Electricity.**—This, after a few lessons, can be applied by the mother at home. An effective faradic battery can now be bought for about twenty-five shillings. Care should always be taken not to apply the current too strong or for too long a time at one sitting.

Progress will always be slow, and treatment must be carried out systematically, and for a long time. Probably the arm or leg will always be weak, and will get tired sooner than the sound one. A parent will be well rewarded for all the trouble if the limb remain only a little weak, instead of hanging as a useless flail, utterly incapable of doing any work at all.

In neglected cases the muscles contract, so that the tendons may require dividing, and the limb to be put into a surgical boot.

The paralysis itself never tends to get worse.

RHEUMATISM.

This disease is very apt to be overlooked, especially in young children, as the joint pains are often very slight, and are put down by the mother or nurse to 'growing pains.' The serious thing about rheumatism in young children is that the heart is so liable to become affected. Heart disease in children is always dangerous, and often fatal. St. Vitus' dance may follow an attack of rheumatism.

If a child complains of pains in its ankles, knees, or wrists, the best thing to do is to keep it warm in bed, and send for a doctor. In some cases muscular rather than joint pains are complained of. Should the heart or its covering be affected, there may be vomiting, breathlessness, fever, and pain in the stomach. In this case a mother should not be impatient to get the child about again. Complete rest in bed for some months will often allow the heart largely to recover itself. Such children should live, if possible, on a gravel soil, or by the sea, and be carefully guarded from strenuous exertion until youth is reached.

CHAPTER XIII.

BABY IN THE TROPICS.

Good results of Breast Feeding—The Wet Nurse—Hand Feeding—Fresh Air and Ventilation—Clothing—Bathing—Sleep—Exercise—The Skin—The Nervous System—Climate—Sunstroke—Illnesses—Malaria—Intestinal Disorders—Worms—Constipation—Diarrhœa—Mucous Disease—Dysentery—Cholera.

IT is comforting to know that European babies thrive well in tropical countries, *when they are breast fed*. It is a delusion that English mothers should not nurse their babies in these conditions; their milk is richer in fat than when living in cold countries, and they themselves generally thrive well on the process.

The mortality of *hand-fed* infants, on the contrary, is enormous, about four times heavier than in England; so an Englishwoman expecting to become a mother should make every possible personal sacrifice, both before and after its birth, to successfully feed her little one, at least for a few months.

This will mean even more self-denial than in a temperate climate, for but little exercise or social life can be indulged in without impairing the quality of the milk. The mother must avoid spicy and re-cooked dishes, and live mostly on milk, eggs, cheese, fresh meat once a day, and a malt extract to assist digestion. Walking about the compound, superintending the servants for an hour or two in the morning, and a drive or short walk in the evening, will be sufficient exercise; there must be a long mid-day sleep, and it is frequently an advantage to take a day or two in bed, for a complete rest, every two or three weeks.

The richness of her milk may cause in the infant a little indigestion or vomiting, and in this case a tablespoonful of boiled water or lime-water given immediately before a feed will generally mend matters.

If, after every effort (see *Chap. III.*), breast feeding is decided against, a wet nurse is by far the best substitute, she and her child being carefully examined by a doctor. She must be kept under close supervision, never being allowed to take the child out of the compound alone. Failing a wet nurse, the milk of a cow or goat should be obtained, if the former can be guaranteed free from tuberculosis, and if the feeding and milking of the animals can be strictly supervised. The milk must always be sterilized, and the Whole Milk method (see p. 42) is stated to give the best results, as children require a specially full allowance of protein and fat to make satisfactory growth, and cow's milk is often rather poor. Failing fresh milk, a dried or condensed milk must be given. Glaxo is specially packed for use in tropical climates, and can always be relied on. Its high fat

percentage is an advantage, and it will keep some time after being opened. If condensed milk be used, it must be of the unsweetened variety. In either case fresh fruit juice must be given daily.

It adds enormously to the responsibility and anxiety of the mother if hand feeding has to be carried out. She must herself see to the asepsis of the whole proceeding, remembering that the ordinary native mind will not understand the principles of germ-contamination. For this reason, at ten months old, when extra protein is required, it is safer to begin with a sterile form, e.g. Plasmon or Secwa, rather than raw meat juice or gravy, unless the preparation of the latter is personally and continuously supervised.

The main features of child-care are the same in the tropics as in England, but more ingenuity and watchfulness will be required to carry them out. A few special points to supplement the chapters on these subjects will be mentioned.

Fresh Air and Ventilation.—Hot air is far less injurious than bad air, and the old plan of shutting up the house during the hottest part of the day was most injurious, and responsible for much of the languor and anæmia prevalent amongst European women.

A wide verandah with movable side blinds, and awnings or fly-tent pitched under a shady tree in the compound, are situations where the mother can work or rest, with the baby in its mosquito-protected cot under her own eye, most of the day, or till 10 or 11 a.m., even in the hottest seasons. Later on this will make a suitable play-room, and the facilities for this outdoor life should be well considered when a house is taken or designed.

The fear of the sun becomes an obsession, and though the direct rays are harmful, yet light should never be excluded from the rooms.

Fresh air must always have access into every day- or bedroom direct from outside, not through a bathroom or corridor. Windows high up in the walls over the verandahs help to keep the air pure, and the beds should always stand out in the middle of the rooms to have air circulating round them.

Clothing.—In hot weather the new-born baby requires a thin woven vest (see p. 11), a thin woollen binder, napkin of Turkish towelling pinned to the binder, and a woollen frock. A little later a thin silk or lawn frock used with a thin woollen petticoat may be preferred. Warmth must be evenly distributed, and, when baby is old enough to kick about, the woollen nightdress must be buttoned at the lower edge, well below the feet, and later on pyjamas, made all in one piece, be substituted.

When exercise can be taken, clothing must be absorbent, porous, very light in weight, and loosely fitting, so that air can circulate freely. A thin, woollen, closed combination may require only a washing-silk frock over it in the most extreme heat; but, as a rule, children are at such times taken up to the hills, where this would be insufficient. A larger number of under-garments are required, as at least one daily change is necessary. Such articles can be soaked in soapy soft water for an hour or two, rinsed

in clean soft water, and dried in the sun, and are best done at home. Sandals must never be worn, and in the cold seasons long stockings and thicker woollens are necessary. Very light but wide sun-hats, with an air space between the crown and the brim, and a red lining, should be worn by both boys and girls, and it is as well to insist on their use when playing on verandahs or under awnings, the white skin of European children lacking the protective pigment of the piccaninnies. The native cotton coverlets are most insanitary, but one or more light, porous blankets should be well tucked in when the child is lying down, to equalize the temperature. A chill at such times is often responsible for sudden and severe attacks of diarrhœa or other digestive troubles. A thin cholera belt should be used at night, and, if the child is subject to diarrhœa, in the day also.

Bathing.—Although it is most important to tone up the skin, the reaction to cold cannot be properly developed in very hot climates, so that quite cold baths should not be taken at any age. A cool sponge-down at 80° after a warm bath at 96° is of great service. A *brief* hot bath promotes surface circulation and is stimulating, but if prolonged it lowers the tone of the muscles and is depressing. A fine dusting powder must be freely used, Mennen's toilet powder being very suitable, as it contains a mild antiseptic, and is peculiarly soft.

Sleep.—More sleep, in pure air, for both mothers and babies is required than in England, to counteract the stimulating effect of the hot climate upon the nervous system.

Exercise.—The tropical climate predisposes to feebleness of all the muscles, which makes it imperative that the effect of exercise should be carefully watched. It should be taken just before a rest, either in the early morning or evening, and in as pure an atmosphere as possible. Over-exercise is often the cause of loss of appetite. The feebleness of the muscles of the eye often results in squint, and of the abdominal muscles in constipation.

The Skin.—The skin is more liable to eruptions than in England, owing to the excessive perspiration. 'Prickly heat' is the commonest form, and is often induced by the piles of clothing heaped on a child by its ayah. Oatmeal should be put in a muslin bag and soaked in some of the bath-water for an hour, being then squeezed into it, and but little soap used, which should be superfatted. The evening bath may have a little liquor carbonis detergens added to it, and after drying, a liberal anointing of olive oil should be applied to affected parts, and an antiseptic dusting powder be freely used in the day-time. A thin silk under-garment will lessen the irritation of the skin. Eczema and boils (see pp. 120, 121) are common.

The Nervous System.—This is very highly developed in the tropics, from the effect of the high temperature, for which reason the remarks on p. 82 apply with even greater force. Restless nights, screaming fits, and sometimes manifestations of hysteria, are easily excited by entertainments and even by kindergarten lessons; so a calm, uneventful existence, with plenty of sleep, is most necessary. The morality of native servants

being of a low order, it is not safe to trust children alone with them after infancy. In Indian households nothing is kept from the children of the family, not even the details of child-birth or death, and the most devoted ayahs will discuss subjects before their little charges which may do them infinite harm.

The Climate.—Tropical climates are by no means all alike, and before leaving England it is always wise to consult a doctor as to the peculiarities of the place to which one is bound. Dry heat is much less oppressive than damp; but, on the other hand, the range of temperature is greater in the dry places. The drop in temperature at sunset is always a source of danger, and must be carefully guarded against by extra wraps or blankets.

Sunstroke is naturally of greater frequency in the tropics, and occurs at a lower temperature in moist than in dry heat. It may begin gradually with headache, fever, and drowsiness, and, if immediately treated, may then subside.

Usually it begins quite suddenly, with convulsions, great rise of temperature, blueness of the lips, very dry skin, scanty urine, and perhaps diarrhœa. It is specially dangerous in children who are the subjects of malaria. Until the doctor arrives, immerse the child in a bath of tepid water, and rapidly cool it with ice or cold water. Take the temperature in the rectum (lower bowel), and when it drops to 102° lift the child out, and wrap in a warm blanket to promote perspiration, which can be assisted by warm weak drinks if consciousness has returned. The child will be much exhausted afterwards, and will be peculiarly susceptible to the sun's rays for some time after an attack of sunstroke. The precautions given under the heading of "Clothing" must be scrupulously attended to, and the child must be strictly under cover during the heat of the day.

Illnesses.—Minor ailments are more frequent in the tropics than in temperate climates, and, if neglected, may have more serious consequences. On the other hand, scarlet fever is almost unknown, rheumatism is rare, and tuberculous disease, except meningitis, not at all common. Pneumonia is very fatal, but the diseases responsible for the highest mortality are malaria and intestinal disorders.

MALARIA.

This disease is due to malarial parasites circulating in the blood. They are introduced into the system by the bite of the female anopheles mosquito, and are of three distinct varieties, giving rise to three different types of fever. It is an old saying—"No mosquitoes (anopheles) no malaria," and this gives the key to almost the whole of preventive treatment. A drop of blood taken from the ear, finger, or toe will show, under the microscope, the malarial parasite.

Attacks of malaria are more fatal in children than they are in adults. It usually has a sudden onset, beginning sometimes with diarrhœa and a copious flow of urine, but, more frequently, with vomiting and convulsions, cold hands and feet, a dry skin, thirst, and high temperature.

After an hour or two of this hot stage, a profuse perspiration appears, and the exhausted child then falls asleep. Sometimes cerebral symptoms predominate, with convulsions passing into delirium and an unconscious condition.

In chronic cases the child becomes very anæmic and yellow, and extremely feeble, while enlargement of the liver and spleen causes swelling of the abdomen. Diagnosis is of supreme importance, and although symptoms may be misleading, this can always be correctly made by an examination of the blood.

Quinine is the one and only drug which cures malaria, and, fortunately, it suits children very well. The taste is an objection, but it can be given in a little glycerin or honey. A baby up to one year can take half a grain to a grain every six hours—and a grain a year is added up to five years of age. No pills or tabloids of quinine should ever be given to children, and the tasteless forms are not suitable for an attack, although they may be used as a preventive. If vomiting is persistent, quinine is given by the rectum, or occasionally by injection into a vein. If living in a specially malarious district—and the nearer to the equator the more likely is it to be so—children should be given quinine twice a week, a grain for a year up to four years. Of course other drugs are often necessary as accessories, especially in the chronic variety, and it cannot be too strongly insisted upon that where at all possible a doctor must always be consulted in children's ailments in the tropics.

The main preventive treatment is based on the proverb quoted above, and, as mosquitoes breed in stagnant water, it follows that all puddles, ponds, old pots and tins, must be cleared away, water-tanks be covered in, and a vigilant daily search be made for any receptacles which might harbour a little water. If any pond must be left, its surface should be covered with kerosene every week. The anopheles, as a rule, only bite, i.e. feed, between sunset and sunrise, so that it is during these hours that mosquito curtains must be most particularly applied—being well tucked in under the cot mattress, or the cot be stood in a mosquito-proof room.

The nursing treatment of an attack is to put the child to bed between blankets, with hot bottles and hot drinks during the time of feeling cold, and then a tepid bath or wet pack to bring down the high temperature and relieve restlessness, with plenty of plain boiled or weak barley-water to drink. It is wise, when the attack is over, to keep the child in bed for a day or two to pick up its strength.

INTESTINAL DISORDERS.

In every case of illness in a child it should be the invariable rule to preserve an action of the bowels for the doctor's inspection. With a young infant, a large piece of recently-boiled lint or a towel should be placed inside the napkin: with those old enough to use a receptacle, this should be scalded out with boiling water just before use, and be immediately covered.

In the tropics, doctors examine the blood for malaria, and the fæces

for animal parasites, etc., as part of the ordinary routine examination, the reason being that, in a very large number of cases, one or other of these causes is at work.

Worms are exceedingly common, and are introduced either by contaminated water, or by uncooked vegetables or fruit.

To those mentioned on p. 123 must be added the *whip worm* ; this and the *round worm* are the commonest varieties in the tropics. Symptoms of worms are generally much more severe than in England, and may be first manifested by convulsions and high temperature, but often only cause either loss of, or voracious, appetite, vague abdominal pains, grinding of the teeth, and scratching round the anus. Santonin is generally ordered when a positive diagnosis has been made, and is given at night and early morning. This drug causes a greenish-yellow colour of the urine, and sometimes temporarily affects the sight.

Constipation.—In *breast-fed* babies this is generally caused by a lack of fluid due to excessive perspiration ; the child should have plain boiled water between the feeds, and the mother a plentiful supply of either water, or barley-water and milk, with an occasional aperient. The mother's milk should be analyzed, lest it be poor in fat, in which case sterilized cream and boiled water, with a little malt extract, should be given once a day. Orange juice and water may also be given. *Hand-fed* babies may be suffering from excess of starch in their food. Older children should have more fruit juice, be made to eat their meals very slowly, and given plenty of water ; both they and young infants should have abdominal massage after their bath, and the *habit* of a daily evacuation be early enforced. Whole-meal bread, porridge, bananas, or uncooked fruit in excess, will cause colic and diarrhœa. Cascara and emulsion of petroleum are the most useful drugs, though these should be avoided as much as possible.

Diarrhœa.—This is exceedingly common, and should never be allowed to continue unchecked. The frequent changes in temperature may sometimes cause it, even without a chill. Germs from dirty rubber teats and comforters, and flies alighting on feeding apparatus, are even more responsible than in temperate climates, and the most scrupulous attention to nursery details of cleanliness is essential, the ' odour of baby ' on entering the nursery being an urgent danger signal (see pp. 95–98).

Mucous Disease is a frequent cause of chronic diarrhœa, and is a catarrh of the mucous membrane, affecting not only that of the bowel, but sometimes that of the bronchial tubes and the bladder. The mucous membrane of a European child in the tropics is peculiarly liable to be upset, either by a chill, or, more frequently, by an excess of starchy food. This causes an abnormal production of mucus, and when it occurs in the alimentary canal it forms a very suitable soil for the several kinds of worms to hatch and breed in. In this case the child has to be treated for the two conditions. The diarrhœa often alternates with constipation, but in both cases large quantities of mucus, perhaps tinged with blood, will be seen in the evacuations.

This disease is the commonest cause of malnutrition, and may give rise to fears of tuberculous disease, although easily diagnosed from it.

Sugar and starch foods must be reduced to a minimum ; the rice beloved of all natives is an actual poison to such children, and a strict watch must be kept that it is not secretly given. Plenty of fresh meat, chicken, pigeons, etc., fish, and eggs, must be used, milk must be citrated and diluted, and only a very little baked bread or toast allowed, with a few stewed green vegetables ; but no potato, cakes, sweetmeats, or pastry. Chill must be carefully excluded, and much exercise forbidden, while a change to the hills or the seaside is often beneficial. It is most important to check this disease at its commencement, as later on it is most intractable.

Dysentery. This disease may be of several kinds, according to the germ or organism which is the source of the trouble, and which causes inflammation and ulceration of the walls of the bowel. These germs are carried to the food tract by means of contaminated water, raw vegetables, flies, dust, etc. They can be detected by the microscope in the stools. One kind begins gradually, another suddenly, but both are characterized by much straining, often so severe as to cause prolapse of the bowels, and by the passage of mucus and blood. There is much abdominal pain, and, in bad cases, great prostration, and frequently convulsions.

A high temperature often occurs, and may denote a malarial complication. Sometimes shreds of the lining membrane of the bowel are passed, which smell very offensively. The disease appears to be most frequent at the beginning of the rainy season. The germs may be present in the intestine, and produce no symptoms until a chill is taken, or some other ailment lowers the child's vitality and resistance, when they burst into virulent activity. Intussusception (see p. 125) may occur. At the very beginning, even if symptoms are slight, the child should be kept warm in bed, and his strength husbanded in every way possible. If no doctor can be obtained quickly, a dose of castor oil should be given, and for food, only whey, albumen-water, chicken broths, and meat juice (if absolute cleanliness can be guaranteed) be given for a few days. The bowel should also be washed out with warm water, and a serum treatment is often carried out. In chronic cases a vaccine may be used, and here the diet ordered must be adhered to with faithfulness.

Cholera.—This is an epidemic disease, and if known to be prevalent, children should be removed from the vicinity. It is caused by a most virulent germ called the 'comma bacillus,' and is very fatal in young children. The onset is generally sudden, with watery diarrhœa, which soon becomes like rice-water, with flakes of mucus floating in it. Vomiting, abdominal pain, and cramps are common. Collapse and extreme coldness quickly supervene. The constant drain of fluid causes rapid shrinkage of all the tissues, and little or no urine is passed. Warmth, stimulants, and warm saline injections are useful, but a doctor must be obtained as soon as possible.

It will have been noticed that the majority of baby's special troubles

in the tropics are caused by different forms of living organisms. In a hot English summer constant war has to be waged against these—milk goes sour, meat becomes bad, flies multiply, smells increase, and epidemic diarrhœa claims its thousands of baby victims.

In the tropics this war has to be waged the whole year round, and under infinitely worse conditions, for not only do these organisms flourish exceedingly, but the vast majority of the population, having become inured through the ages, and being possessed of a fatalistic mind which accepts preventable evils without resistance, are extremely indifferent and even antagonistic towards the measures by which the European endeavours to prevent the entrance of these organisms into his unacclimatized system.

It follows that to rear healthy babies there must be a practically continuous personal supervision of every detail of their daily life.

CHAPTER XIV.

MEDICINES FOR BABY.

Medicines—Measure Glasses—Powders—Aconite—Alcohol—Bicarbonate of Soda—Borax—Bromide of Potassium—Calomel—Cascara—Castor Oil—Citrate of Soda—Cod-liver Oil—Dill-water—Glycerin—Ipecacuanha—Magnesia—Malt—Manna—Opium—Parrish's Food—Paraffin—Sanagen, Vi-Casein, and Bynogen—Senna—Sulphur—Compresses—Embrocations—Ointments—Powder—Poultices.

THE less medicine baby takes the better will it be. Baby's stomach was made for food, not medicines. Many mothers seem to forget this, and are perpetually dosing their unfortunate children with aconite, teething powders, castor oil, etc. It is hardly to be wondered at that such infants are never really well; but it does not appear to dawn upon the mother that the remedies employed are creating the very evils they are supposed to avert.

All medicines should be kept in a place by themselves, under lock and key, and every bottle properly labelled. Nothing is safe from a child, and to have medicines, liniments, and ointments lying about in the bedroom or nursery is most dangerous, many a fatal accident having occurred through want of forethought in this matter.

Nurse should never be allowed to give any medicine to baby, no matter how simple, without the knowledge of the mother.

It must be remembered that children cannot be treated by simply labelling the disease, even supposing the mother's diagnosis is correct. Two children, both ill with bronchitis, may require exactly opposite treatment: the remedy that would save the one might kill the other. The great thing is to treat the *child*, not the *disease*.

Always carefully measure out the quantity of any medicine required in a proper medicine glass; to guess is often dangerous, and to use ordinary spoons for measurement is always unsatisfactory. It is well to have two measure glasses, one a drop measure and the other for larger quantities. (*Fig. 33.*)

The following table is approximately correct:—

- 60 drops equal one drachm, or teaspoonful.
- 120 drops equal two drachms, or one dessertspoonful.
- 4 drachms equal half an ounce, or one tablespoonful.
- 8 drachms equal one ounce, or two tablespoonfuls.
- 20 ounces equal one pint.

The best way to give a powder is to moisten the tip of one's finger, and when all the powder has adhered to it, introduce it into the child's mouth,

as far back as possible. If a powder be at all nasty, mix it with a little finely-powdered loaf sugar or honey.

We will now look at a few remedies about which every mother ought to know something, in case of emergency ; but it cannot be too much insisted upon that the only proper person to prescribe them is the doctor.

Aconite.—This is a most useful drug, and is often ordered in the treatment of the feverish attacks to which infants are so liable. When a child is feverish, with a hot, dry skin and quick pulse, aconite will often act as a charm, quickly reducing the fever, slowing the pulse, causing perspiration, and enabling the child to get off into a comfortable sleep. It is, however, a depressing drug, a powerful poison, and should not be given without medical advice.

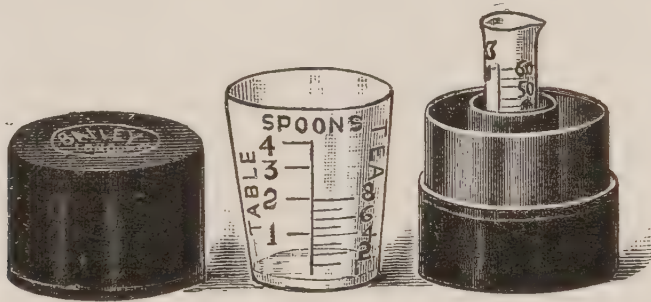


FIG. 33.—Measure glasses.

Alcohol.—In the form of brandy, alcohol is an invaluable medicine for babies, though of course it should only be used in an emergency. To give alcohol to a child, as a regular thing, ought to be rendered a criminal offence.

Brandy is most useful in cases of collapse, e.g., after severe attacks of vomiting or diarrhoea. The dose for a child of one month old would be ten drops every four or six hours, diluted with three or four times the quantity of water. The quantity may be increased according to age, till at six months twenty to thirty drops every four hours for a few doses may be given just before food. Mixing it with a bottle of food is useless : firstly, because it is too much diluted to do any good ; and secondly, because the child, being ill, will probably only take a few mouthfuls, in which case it practically gets no brandy at all.

Medicated wines, e.g., coca wine or beef and iron wine, should never be given to children, and when in severe cases of illness brandy is being administered, it should always be called and treated as medicine.

Bicarbonate of Soda.—This remedy is chiefly of use in cases of acidity and flatulence. It is conveniently put up in tablets containing five grains each. One of these dissolved in a teaspoonful of dill-water and added to two teaspoonfuls of hot water is a capital remedy for an attack of ‘ wind ’ in a child of six months old. As before mentioned, bicarbonate of soda can be used for neutralizing acidity of milk, and a strong solution painted on a recent scald or burn quickly allays the pain. When a child’s urine

scalds and irritates the skin, a dose of bicarbonate of soda in an ounce of water three times a day will usually put all right.

Borax.—One ounce of borax dissolved in four ounces of glycerin makes an excellent application for painting the mouth in cases of thrush. Mixed with six times its volume of water, the glycerin and borax mixture makes an efficient gargle for older children.

Bromide of Potassium. This is a nerve sedative, and is often of great service during teething. It is also very useful for children who are excitable and nervous, and who talk and cry out in their sleep. Bromide acts as a depressant, and should never be given as a regular thing for any length of time.

Calomel or Grey Powder.—These are preparations of mercury which were, at one time, very largely used in the diseases of infants, but through misuse and abuse have fallen into undeserved disrepute. If baby refuse its food, and the motions be clay-coloured, hard, and dry, a dose of calomel at bedtime is often ordered, and will generally work wonders. In chronic indigestion, a doctor will often order very small doses of grey powder two or three times a day, with very good results.

Cascara, in the form of an elixir or syrup, is a useful aperient in the chronic constipation of children, being given regularly for some time to act as an intestinal tonic.

Castor Oil is an efficient aperient, but it has the disadvantage of being constipating afterwards. This very feature is, however, of use when given at the beginning of an attack of diarrhœa to clear out the bowels. The dose for a child of six months old is half a teaspoonful. It should never be given to quite young infants, except for diarrhœa.

Citrate of Soda.—This should always be at hand when there is a ‘bottle-baby’ in the house. Two-grain tablets are convenient, as one of these to each ounce of milk is the necessary quantity to convert the casein into a soft, easily digested mass.

Cod-liver Oil is a food rather than a medicine. Infants can take it in diluted milk mixtures instead of cream. It may be employed in all wasting diseases, and given to children that are always having colds and coughs. Thin, delicate children are often picked up and strengthened in a wonderfully short time by it. To a child a year old a teaspoonful may be given twice daily after food. It is a good plan to begin with a teaspoonful once a day, on going to bed. With older children the dose may be increased to a dessertspoonful, which, if necessary, may be floated on milk, coffee, or orange wine. It is of no advantage to give very big doses of the oil: it will only repeat, and is not digested. Kepler’s extract of malt with cod-liver oil, and Scott’s emulsion of cod-liver oil, are excellent preparations and easily digested.

Cod-liver oil is also a good preventive of chilblains in older children. Some children who will refuse cod-liver oil will take Virol, a preparation of bone marrow rich in animal fat.

Dill-Water.—Under this head may also be considered caraway, anise, and peppermint-water, which are all good household remedies for stomach-

ache, colic, and flatulence. A teaspoonful, repeated occasionally if necessary, is the ordinary dose. An equal part of hot water added to the remedy greatly enhances the effect.

Glycerin.—A teaspoonful in water at bed-time often makes a good aperient for a child. Of late it has been the fashion to use an injection of this drug into the lower bowel, a special syringe being made for the purpose; about a teaspoonful of glycerin is required, and it usually acts within five minutes. Suppositories containing glycerin are also employed, but neither method should be used in infancy.

Ipecacuanha.—This drug is usually given in the form of the ipecacuanha wine. In large doses it acts as an emetic, that for a child of a year old being one teaspoonful, repeated in fifteen minutes if necessary. In the treatment of croup it is often desirable to make a child vomit at once, and mothers whose children are liable to that disease had better keep a bottle of the wine in the house, so as to be at hand if required. It is often used in this way to clear the chest of phlegm in cases of bronchitis, or to empty the stomach in cases of over-feeding.

Ipecacuanha wine is not a drug that keeps well, and after some months may make a deposit at the bottom of the bottle, and lose its good qualities. Five grains of ipecacuanha powder are equally efficacious, and keep better.

Magnesia.—Probably the less aperient medicine a child takes the more regularly will its bowels act. As pointed out elsewhere, the chief remedy for constipation is a change in the diet and a regular habit.

Magnesia, in the form of the citrate, or of Dinneford's fluid magnesia, is a harmless aperient if used only occasionally. In the summer weather, when a child gets easily upset, a dose of magnesia will often be very beneficial.

Malt.—There are several excellent preparations on the market, both with and without cod-liver oil, and children will readily take and digest them. They are especially indicated for thin children with poor appetites and delicate digestions. Half a teaspoonful sucked from the finger or rubbed up with a little milk will be greatly relished by an infant, and can be given twice a day after food. For a child a year old a teaspoonful may be given.

Manna.—This is a very common household remedy for infantile constipation; a teaspoonful dissolved in the bottle acts with some infants, but it is very uncertain, and with others will have no effect at all.

Opium.—This drug should never be given to children under any circumstances whatever, except by a doctor's order. Infants tolerate opium very badly, and some thousands of young lives have been sacrificed to it, administered in the form of soothing powders, composing mixtures, quieting syrups, paregorics, etc. No mother should be tempted ever to use any of these in order to keep her baby quiet; they are poison, and should be avoided as such. Two drops of laudanum have proved fatal to an infant, and a third of a grain of opium has killed a child of nine months, while patent 'soothing mixtures' are the cause of a great many

of the inquests held upon children. A child who is always crying and sleepless cannot be well, and the mother had far better call in a doctor to point out what is wrong.

Parrish's Food.—This is a good pick-me-up for children over two years old: it is best taken after dinner.

Paraffin.—Purified medicinal paraffin is the safest aperient for children, as it is not absorbed, but acts mechanically as an internal lubricant. It is best given to infants in the form of an emulsion, e.g., as Semprolin, which is a very pure and pleasant preparation.

Sanagen, Vi-Casein, and Bynogen.—These are really foods, being skilful combinations of casein and glycerophosphates, and are most useful with neurotic children when run down, a teaspoonful being given twice a day with meals.

Senna.—Syrup of senna, though a good aperient, causes too much griping for young children, and syrup of figs is generally to be preferred.

Sulphur, in the form of flowers of sulphur, the confection, or sulphur lozenges, is often of use to get a child's bowels into a proper condition. It should not be given to children under two years of age.

EXTERNAL REMEDIES.

In conclusion, it will be useful to consider briefly a few of the external remedies which are commonly employed.

Compresses.—A compress consists of several folds of soft linen or calico wrung out of water, and covered with a piece of oiled silk or mackintosh sufficiently large to overlap the linen on all sides (*Fig. 34*). Compresses are either hot or cold, according to the temperature of the water used.



FIG. 34.—Compress.

In some cases compresses have a sedative effect, calming a child's nerves and inducing sleep. One applied to the abdomen will often relieve constipation, and over the throat will usually relieve the aching of that part when sore.

Lotions.—*Boracic lotion* is a useful household remedy. It is good for

bathing eyes which are inflamed from a cold, for cleansing little wounds, and for applying on lint under oiled silk to gathered fingers, besides the many ways indicated in the preceding pages. Put one ounce of boracic acid crystals into a clean pint bottle, add hot water that has been thoroughly boiled, and shake well. Some of the crystals may remain at the bottom, and when the upper part has been used, a little more boiling water may be added. *Evaporating lotion* is made by mixing any spirit, e.g., methylated spirit or eau de Cologne, with four times its quantity of water. A single layer of linen or muslin can be dipped in this and laid on the forehead when a child is very feverish and restless, being changed

as soon as it becomes dry. The same treatment is useful in the case of injury to a joint, while waiting for the doctor. Some coal-tar preparation, e.g., Toxol, should always be kept in the medicine cupboard, as it is a strong but non-poisonous disinfectant. Any wound made by falling in the road or garden should be well washed with it, in a strength of one teaspoonful to a pint of water.

Embrocations or Liniments.—In cases of cold on the chest, whooping-cough, etc., it will often prove beneficial to rub the chest back and front, night and morning, with a simple liniment. An infant's skin is very easily irritated, so that no strong embrocation should be employed. *Simple oil*, *camphorated oil*, or a *soap liniment*, the two latter being *diluted with oil*, are about the best to use for this purpose. The rubbing should be performed with the child across the knees, in front of the fire.

Ointments.—Hazeline cream and boracic and zinc ointments, the two latter being diluted with equal parts of white vaseline, are perhaps the best ointments for nursery use in cases of chafing, rough skin, or sores. Vaseline with one drachm to the ounce of eucalyptus oil is useful for burns.

Powder.—One containing equal parts of starch, zinc, and boracic acid is useful in hot weather, or to dust on the skin after a poultice.

Poultices.—These are much less used than formerly, but it is well to know how to make them properly. The material generally employed is freshly crushed linseed. The basin and knife should both be scalded in hot water; sufficient boiling water should then be put into the basin, and the meal gradually added, stirring all the time with the knife. The product should now be of the consistency of batter pudding, and be such that it can be easily spread on soft linen or old rag with the knife, to the thickness of about half an inch. The poultice should then be applied next the bare skin, and covered with one or more layers of thick flannel. A poultice thus made will keep hot for two or three hours, at the end of which time it should be removed, and, if necessary, a new one applied.

Of course a boiling-hot poultice should never be suddenly clapped on the tender skin of a child. Try the temperature of it with the back of the hand, and then gently and gradually cover the required part.

Mustard may require to be added to the linseed; in this case it must be thoroughly mixed with the meal, or it will collect in one spot and produce a blister.

✱ A poultice to cover the chest which contains, say, a teaspoonful of mustard, should be partially removed after ten minutes to see if the skin be sufficiently reddened. If so, remove it at once, or a large blister may occur before the danger is thought of.

After the removal of a poultice, the affected part should be covered with a layer of warmed cotton-wool, to prevent the child catching cold. On the chest the wool or poultice is best kept in place by means of a little knitted jersey.

A jacket poultice is one made to cover the entire chest, back and front,

coming well up beneath the armpits, and retained in place by a safety-pin over each shoulder.

Antiphlogistine is now often used for the same purpose as a poultice. It is very comforting, and need not be so often changed.

A good method of employing heat to relieve pain is to half fill an india-rubber hot-water bottle with hot water, slip it into a flannel bag, and apply it to the painful part.

* * * * *

How to bring up a baby in a rational and scientific manner has now been briefly described, and in following the spirit rather than the letter of the foregoing pages, it is believed that mothers and nurses will prove the truth and wisdom of them in their own experience—*experientia multa docet*.

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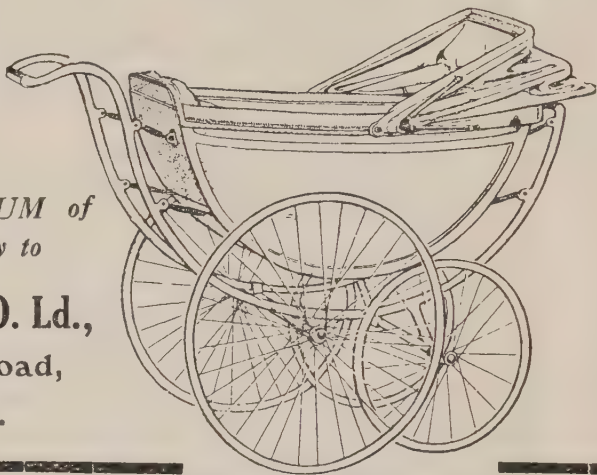
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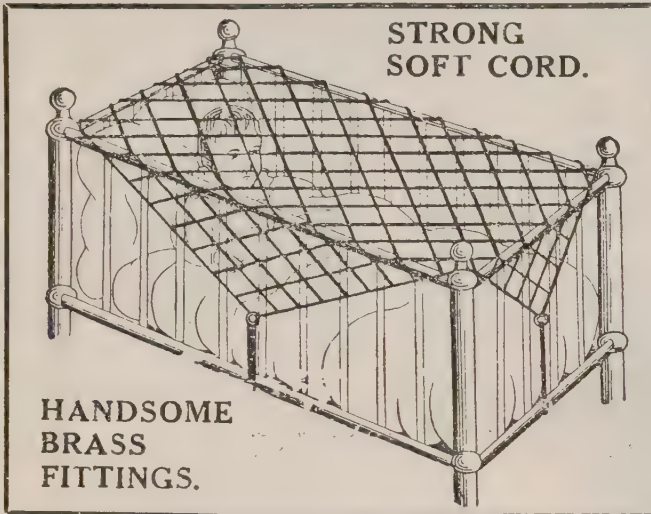
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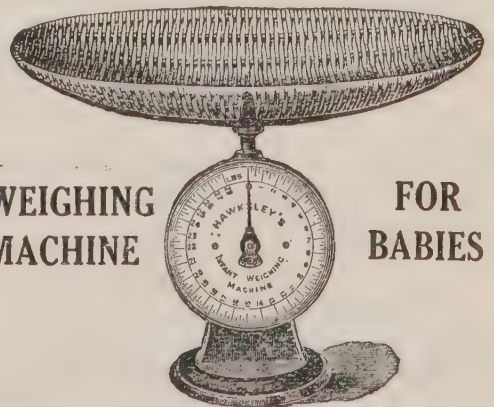
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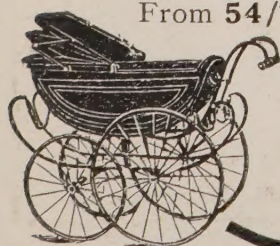
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